

NEBULA

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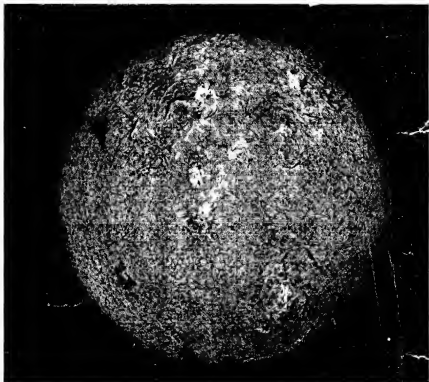
SCIENCE FICTION

NUMBER 28



FOR READING THAT'S DIFFERENT

THE SOLAR BOMB



The Sun, Photographed in Hydrogen Light
(Photo. Science Museum, London. Reproduced by permission of Mount Wilson Observatory, California.)

KENNETH JOHNS

Eventually, one fine day, due to the consumption of hydrogen in the core, the Sun will swell to one hundred times its present radius and will become one thousand times more luminous.

Now, in its present state, the hydrogen bomb in the sky we call the Sun is a bigger explosion than anything a Terrestrial scientist could conceive of triggering off. Six hundred million tons of hydrogen are transmuted every second in a continuous explosion that has already lasted for at least 5,000 million years.

Yet such is the vast size of the Sun— 2×10^{27} tons—little hint of the fantastic nucleus-forming reactions in its interior reach its almost perfectly spherical surface.

Sheer mass efficiently damps down the violent radiation to an incandescent 6,000 degrees Centigrade—which is just as well, for the Earth would vaporize instantly if exposed to the unfettered thirteen million degrees Centigrade of the core.

The Sun is a perfect example of automation. It is the supreme working-

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SCIENCE FICTION

Edited by **PETER HAMILTON**

Issue Number Twenty-Eight

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but not of this nightmare journey stalked by death at every turn*

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—fate was to have the last laugh, however*

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Look here . . .

With the launching of Sputniks I and II now quietly slipping into the past, sufficient time has elapsed for the increased public interest in things scientific to make itself felt. Perhaps the most important aspect of this new scientific upsurge is reflected in the sudden appearance of a large number of new science-fiction books and magazines (as well as a satisfactory increase in the sales of those in existence prior to the "first step into space") and so it would seem that a significant proportion of the public has been sufficiently impressed by the scientific achievements of the Russians to seek stories of sensible future prediction as a basis for at least a part of their reading enjoyment.

The reason I consider this to be such an important fact is that imaginative writing, when seasoned with proven scientific data, can very often lead to the development in its readers of the ability to look around themselves and re-assess present-day society with a mind refreshed and stimulated by the type of constructive imagination which is the very mainspring of science-fiction. Those who have possessed this ability in the past have been termed visionaries and very often ridiculed, but it is to the influence of such people that we owe almost every scientific advancement in the history of mankind.

Science-fiction can also help to counteract the oddly old-fashioned pronouncements on the Space Age made by many well-known scientists, including the British Astronomer Royal. One distinguished astronomer is reported to have stated that he thinks space travel is impossible, another that the five miles he travels to his observatory are more important to him than the distance from our Sun to Alpha Centauri. This shocking lack of imagination on the part of "authorities" on the subject gives us a ready-made reason why the West—and Great Britain in particular—lags so far behind the authoritarian countries of the East in scientific development. Indeed, were it not for the unceasing influence of science-fiction and its "fans" the Russians could doubtless put a rocket on Mars before our average citizen, whose sole alternative source of information on the subject is the scientific "expert", had got used to the idea that it is possible to leave the Earth's atmosphere.

Another argument put forward by "authorities" whose sole ambition seems to be the maintenance of the scientific *status quo* and the prevention of the new age of progress and discovery which space travel would bring, is that large sums of money should not be made available for the building of a Moon rocket while there are many millions of people here on Earth who live below what we, in Western countries, would regard as subsistence level. The hypocrisy of such a sentiment becomes obvious immediately one remembers the fact that countless billions of pounds, dollars and roubles are wasted annually on maintaining military forces, the sole purpose of which is to reduce all of us below subsistence level by destroying civilisation in a third world war.

Many other instances could be quoted which prove, paradoxically enough, that many of our modern scientific "experts" tend, to use the words of Isaac Asimov in a recent edition of *Astounding Science-Fiction*, to be somewhat more conservative than elderly corporation lawyers. We science-fictionists, while lacking the specialised knowledge of the scientist, possess imagination and its inherent power to envision that which is as yet to be. This would seem to be a much needed quality in the world today as, without its influence on the "authorities" and "experts" who take such a hand in running our lives, men would continue to stumble about in the mud of this insignificant little planet of ours, killing one another in the interests of peace and inspired only by the words of scientists too lethargically minded to comprehend the final goal which inspired their great predecessors.

So, by its influence on the minds of men, science-fiction will continue to blaze the trail of scientific achievement.

Peter Hamilton.

Solitary

*Justice had been foiled by his agile brain—
fate was to have the last laugh, however*

Illustrated by Martin Frew

Ever since the computers came to be running things pretty much their own way, handling data and forming conclusions, the only way a man could achieve any notice in the galaxy was to do some original thinking—and by original, read *alogical*. An analog computer is a clever thing, with its countless supercooled cryotrons clicking off bits of information, but its mind is a limited sort of creature. Men, luckily, aren't limited to the flip-flop on-off type of binary thinking that the computers specialise in.

Among those most painfully aware of this was George Brauer of Crime Bureau. Because the job of keeping data on the galaxy's criminals was so complex, Crime Bureau was among the first to be completely computerised. Its employees were reduced to the level of data-predigestors, selecting information to be programmed and fed to the computers. As the centuries passed, the human members of Crime Bureau became less and less necessary to the scheme of things.

They were mere adjuncts to the TOTIVAC that did the actual work. This irked George Brauer.

At thirty-one, he felt he was at a crossroads. This was his fifth year with Crime Bureau—and in those five years he had become an increasingly more skilful computer technician, nothing more. This was not why he had joined Crime Bureau.

He had been interested, being a serious, reflective man, in the concepts of crime and punishment, the philosophical determinance of guilt, mores and ethos, responsibility and necessary obligation. They fascinated him.

"You ought to join Crime Bureau," his college room-mate told him sourly. "Always talking about murders and things, as if you were going to commit a couple."

"It's purely a scholarly interest," Brauer said. And when he graduated, he joined Crime Bureau.

At thirty-one he was at a crossroads.

Moodily he sat at his burnished duralplast desk in the magnificent Crime Bureau Ministratory in Upper Ontario, toying with the sheets of paper before him. They listed statistics governing occurrence of voyeurism on Earth, and on the seventeen Norm Planets used as guideposts in such things. Brauer was supposed to integrate them, feed them to omnivorous TOTIVAC, and wait while the statistics came rattling back neatly interpreted. They were to be transmitted to Lurinar IX, an Earth-type planet afflicted simultaneously with a rash of voyeurism and with a starchily-puritanical ruling oligarchy, for benefit of the bemused and troubled Chief of Police there.

As he worked, Brauer found himself envying that Chief of Police. Stranded on a backwater world as he was, at least the man had a chance to deal with crime and criminals first hand, not with the ever-present TOTIVAC peering over his shoulder. Brauer plodded gloomily through the long columns, then sent the whole tape whirring into the innards of the computer.

Pulses flitted down tantalum cryotrons; information was bandied and conclusions drawn. And Brauer ground his fist into his chin in boredom.

The computer took all the trial-and-error out of things. To be sure, TOTIVAC operated on a trial-and-error system itself, as did any analog computer. But the interval between successive trials was often less than a micro-microsecond, and a speed of that order

allowed for all the wrong guesses a machine would be likely to make in a two-minute span.

Two minutes. The data came chittering back at him. Without even looking at it, Brauer tossed it in the upper basket on his desk.

Stultification—that was the word. A man had to do a little thinking on his own. It was all right to use the computer as a tool to simplify the process of thought—but not as a substitute for it.

On a sudden impulse he stuck a requisition form in his typewriter, which was an antiquated manual model, and tapped out a brief message: SEND ME DATA CARDS ON CURRENT FILE OF UNSOLVED CRIMES.

He glanced at what he had written, scowled, then added for the benefit of the computer: TIME LIMITATION: LAST THIRTY YEARS. SPACE LIMITATION: THIS GALAXY.

Brauer paused, then tacked on a second postscript: HOP TO IT, OR I'LL PUT KETCHUP IN YOUR FEED LINES.

He integrated the requisition form and shot it downward into TOTIVAC's bowels. An instant later the red light over his desk blazed, indicating a message from the computer, and the machine replied: COERCION INVALIDATES REQUISITION. PLEASE DELETE SAME OR FACE PENALTY.

Brauer could imagine the storm his whimsical threat had kicked up down in the defensive banks of the computer; probably they were busy monitoring the cooling system, the fuel input, and anything else that might be construed as a "feed line" on guard for a sudden influx of ketchup.

COERCION DELETED, he replied. NO DANGER OF DESTRUCTION BY KETCHUP.

The warning-light blinked out; the computer's hackles were subsiding.

Moments later came the deluge.

He had asked for the current file of unsolved cases; he got it. It came spilling out of the computer's orifice with a rush and a roar, card after card covered with TOTIVAC's neat typing. Brauer blinked as the cards piled up. There were a lot of people in the galaxy, and a great many crimes—and if even just a bare fraction went unsolved—

He sighed. There was no way to interrupt the machine, now that it had begun to disgorge. The computer was reaching into the depths of its files, coming up with cases that had been on the books

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for decades. At least five thousand cards were on his desk now, and they still came.

The Communicator chimed. Brauer grabbed it and heard his superior bark, "Brauer, what are you *doing*?"

"Original research, Chief," he said smoothly. "The machine's a little over-enthusiastic, that's all."

"Oh? Research on what?"

"I'd prefer not to talk about it until I'm finished. I may need a short leave of absence, too."

"I suppose it can be arranged," the Chief said gruffly, and broke the contact.

Brauer stared balefully at the mounting stack of cards. All right; he had announced he was working on something. Now he would have to follow it through.

A second stack of five thousand cards had appeared, and it seemed as if the computer was well on its way toward delivering a third when abruptly a single card fluttered out of the orifice and the message-light flashed. Brauer snatched up the communication.

END OF IMMEDIATE-ACCESS OPEN FILES. THERE

WILL BE DELAY OF ONE HUNDRED EIGHTY SECONDS WHILE SECONDARY FILES ARE SEARCHED.

"No there won't!" Brauer half-shouted. Quickly he pecked out a reply: DATA ALREADY DELIVERED IS SUFFICIENT FOR PROJECT. TERMINATE SEARCH WITHOUT FURTHER ACTIVITY.

A pause, then the response: ACKNOWLEDGED. TERMINATED.

"Thank goodness," Brauer said fervently. He stared at the heaps of data-cards in a somewhat glassy-eyed manner, feeling like the sorcerer's apprentice. But at least he had managed to shut off the flow.

He lifted the uppermost card and skimmed it. Tall thin Sirian suspected of shoplifting in Third City of Vega IV twenty-nine point nine years before, never apprehended. Further details other side.

The second card was even less promising. Child's pet stolen by large hairy man on morning of 7 July 2561, planet Earth. Pet never recovered. Details other side.

The card had been in the files thirty years. Someone could gain more than a little prestige, Brauer thought, simply by clearing junk like this out of the memory banks. By now the stolen pet, unless it had been a Galapagos turtle, was long since dead, and the bereaved child grown to manhood. And yet the "crime" was still carried as unsolved.

He reached for a third card. Like the first two, it dated back thirty years. But it was considerably more interesting. Brauer read it once perfunctorily, then went back and examined it in detail.

CHARCOT, Edward Hammond. Born 21 Dec 2530, New York City, Earth (Sol III). Criminal record: petty theft, apprehended 8 Nov 2547, corrective term one month. Released for good behaviour. Kidnapping, apprehended 12 Jan 2558, escaped from custody 17 Jan 2558, relocated 11 June 2559, concluded 4 October 2559. Trial begun 18 June correctory, transshipped to Procyon IV 7 November 2559. Entered upon life term 11 Jan 2560, escaped from Procyon Correctory 12 May 2560. Still at large (see Additional Data Sheet 101 in request file.)

Brauer flexed the card between two fingers and dug back in his memory—a memory not nearly as retentive as TOTIVAC's, but unusually good as mere organic ones went. He was investigating

the data stored away in his youth, in his period of greatest criminological enthusiasm, before the disillusionment of joining Crime Bureau.

Edward Charcot. Yes, he remembered Charcot, even though the case had been most notorious only a month or two after Brauer's birth. Charcot had been a cheap criminal, a petty hood of the sort that no amount of careful breeding seemed likely ever to eradicate from human genetic lines. He had committed a particularly vicious kidnapping thirty-odd years ago, and he had been caught. And, unless Brauer's memory was at fault, he was to date the only man ever to break out of the Procyon Correctory.

With nervous haste he shoved the umpteen-thousand data cards back into the computer's orifice and punched out a new requisition: SEND ADDITIONAL DATA SHEET 101 ON CHARCOT, EDWARD HAMMOND.

Moments later the sheet arrived. To his satisfaction Brauer saw he had been right: Charcot's notoriety was based on the fact that he was the only man ever to escape from Procyon's airtight correctory.

He had stolen a one-man warship somehow, and struck out for points unknown before anyone knew he was missing. One of the minor mysteries of the case was how Charcot had managed to escape—but since no one before or since had succeeded in getting off Procyon IV, it was considered that the experiment was non-repeatable. The major mystery was Charcot's whereabouts.

The data sheet listed all reports, reliable and otherwise, of his location. He had been seen (or half-seen) at a dozen places radiating in a more-or-less straight line out toward the region of Bellatrix, and there the trail vanished. A sporadic search of the six planets of Bellatrix had revealed nothing.

Thoughts tumbled through Brauer's mind.

Who Edward Charcot was didn't much matter, nor the fact that Charcot had humiliated the penologists by getting out of an escape-proof correctory, nor that he was responsible for a fairly ghastly crime. No.

He had disappeared, though—and that offended Brauer's sense of order. In a galaxy so carefully regulated by analog computers, men didn't disappear. At least, not easily. Of course, this Charcot was a clever chap, obviously—but still, where could he have gone?

The trail led toward Bellatrix and its system. Brauer licked his

lips reflectively. A major attempt had, no doubt, been made toward finding Charcot. It had failed.

Why? Some deficiency inherent in the nature of the pursuit, no doubt. Brauer's pulse-rate started climbing. Here was a chance for original research; here was a chance for an ordinary flesh-and-blood man, with a built-in capacity for making cockeyed guesses, to show up a billion-unit cryotronic computer with its deplorably binary way of thinking.

He decided to find Edward Charcot.

The first step was to activate the communicator.

"Chief, this is Brauer. I want to request a three-month leave from duty."

"With or without pay?"

Brauer hesitated, then boldly said, "With. It's to do that special research job I was talking about."

There was a pause. "Three months with pay . . . it may be rough on our budget, George. Can you tell me anything about the research?"

"I'm going to find Edward Charcot," Brauer said.

The reaction was predictable: "Who?"

"Charcot. The kidnapper who escaped from Procyon Correctory in 2560. Remember?"

"Oh—that one. Hmmm. All right. Fill out the form, integrate it yourself, and feed it to the machine. You know how to do it. I'll see to it your leave's approved."

Brauer rapidly integrated the leave-request and let TOTIVAC have it. Then he formulated a new requisition: SEND ALL DATA AVAILABLE ON CHARCOT, EDWARD HAMMOND.

Moments later he had it, including duplicates of the data-card and Additional Data Sheet 101; the machine was damnably literal about "all data" requests.

Brauer cleared his desk and proceeded to examine the information. Most of it was a repetition of what he had already learned; he skimmed through that, and also through most of Charcot's biography. He wasn't interested in that.

He was interested in the post-escape part of the data. Included in the packet were transcripts of statements by men who had allegedly seen Charcot (or thought they had) in one guise or another after his much-publicised escape. Someone—Brauer hoped it was a man, and not just a watchful facet of TOTIVAC—had charted a probability-pattern with each report of Charcot carefully inked in

according to a weighted colour-spectrum of credibility, ranging from bright cerise for "*fairly reliable*" down to dark violet for "*totally untrustworthy*."

The colour-chart led undeniably toward Bellatrix. And appended to the packet was the report of the scouting-mission that had searched the area for Charcot.

Apparently TOTIVAC had analysed the six planets of Bellatrix and had concluded that Charcot would be on either Bellatrix II, III, or VI, all of which were inhabited by reasonably docile forms of intelligent life.

Scout-ship CD102-X3 had diligently searched Bellatrix II, III, and VI. There had been no sign of Charcot. Whereupon, the trail having trickled out, the Charcot file had been dumped into "*Unsolved*," and probably had mouldered there unmolested until Brauer's requisition had released it.

Humming gently to himself, Brauer rummaged through the rest of the packet. Included was a telefax sheet, now somewhat yellowed with age, dated 12 May 2560, point of origin Procyon IV. It showed a photo of the escapee—he was a darkly handsome, almost suave-looking man, Brauer noted, with a faint moustache, deep-set eyes, a smirk rather than a smile on his lips. A shrewd man, Brauer decided, even though it was an elementary rule of criminology to place little weight upon superficialities of appearance. Yet in Charcot's case, his actions bore out the testimony of his features: it took a shrewd man to get out of Procyon Correctory.

The telefax sheet went on to mention the reward offered for information leading to Charcot's recovery, described him, gave a brief biography. Doubtless there still were some of these sheets mounted on post-office walls in obscure parts of the galaxy, Brauer thought.

He put the telefax sheet back in the file packet and restored the other material as well. He dumped it all into the receiving orifice.

SEND DATA ON THE BELLATRIX SYSTEM, he ordered the computer.

Bellatrix was a star of magnitude Plus 1.7, located 215 light-years from Earth. Relative to Earth, it was located in the constellation Orion, but of course visual proximity from an external point had nothing to do with actual three-dimensional location in the universe.

According to the data Brauer had, Bellatrix had a planetary system comprising six worlds; Bellatrix I was 500,000,000 miles from its blazing primary, and the other five planets were arrayed in nor-

mally distributed orbits up to a distance of three billion miles.

Brauer quickly ran through the survey reports on the six worlds.

Bellatrix I was uninhabited and uninhabitable; it took a regular roasting from the sun, and had a mean temperature of about 300°F.

Bellatrix II *was* inhabited; it was a watery world (the "water," however, in actuality being a mixture of liquified halogens.) The natives were amiable chlorine-breathers whose hide resisted etching by the lakes of hydrogen fluoride common on the planet.

Bellatrix III was likewise inhabited; this was a large, low-mass world peopled by ruminant herbivores, four-legged but intelligent; the record showed a Terran settlement in operation there.

Brauer continued to read. Bellatrix IV and V were both uninhabited: IV was a rocky unappealing world with a scant population of lichens and nothing else. Life had simply not yet gained a foothold there. V was a gas giant of massive gravitational attraction; its surface was unstable, and explorers had deemed it unwise to land.

As for Bellatrix VI, it was an Earth-type world, somewhat colder on the mean, inhabited by humanoid creatures just entering the food-producing stage of culture. The scouts had recommended a closed status for this world, for fear of upsetting the normal development of the expanding culture. The closure had been approved.

Brauer then studied the report of the search once again. He was not surprised to read TOTIVAC's evaluation of Charcot's possible whereabouts.

Bellatrix VI, being a closed world, was the most likely place for a callous criminal to hide, since there was little chance of his discovery on a closed world. Therefore VI had been the prime target of the searchers.

After that came III, since it was a livable and inhabited world. Further down the scale of probability was II, the water-world, where an Earthman could manage to survive if properly protected.

The other three worlds had been rather casually dismissed: V, the gas giant, was eliminated completely, since it was impossible to survive long on a world without a solid surface; I, with its temperature of 300°, was docketed for only a cursory once-over, since it, too, was hardly promising as a hideout for an escaped criminal.

As for Bellatrix V, the utterly barren world, it was likewise dealt off by the computer with a mere once-over. After all, it was illogical that a fleeing man would choose to settle even for a few days on a world devoid of all life.

Brauer chuckled happily as he read TOTIVAC's solemn con-

clusion. Illogical, indeed! Sure it was illogical. But all that meant was that no self-respecting computer would ever choose to hide there.

Happily, Brauer put away his data, confirmed his leave, and arranged for transportation. He requisitioned a one-man cruiser equipped with warp-drive and plenty of charts.

He was heading for Bellatrix.

Just before he left, he requisitioned the data file on Charcot once again, to check something. Yes; the reward was fifty thousand dollars. He wondered if it still stood, after these thirty years.

Even by warp-drive, 215 light-years takes a while to traverse. Brauer spent the time pleasantly, reading his collection of classics: Radin, Fell, Staub and Alexander, Caryl Chessman, Hornsfall and Wagley. They were part of his prized collection of 20th and 21st century criminology. Back then, he thought, a man had a chance to use his wits—not simply punch data in or out of a bunch of cryotrons.

Crime, after all, was an irrational manifestation. It was foolish, then, to depend wholly on an inflexibly rational binary-orientated mind, or pseudo-mind, to make the top level decisions.

Take this business of Bellatrix, he thought. The silly search, over areas carefully preselected by TOTIVAC. Had any of the searchers bothered to deviate from the prescribed pattern? Probably not—and if they had, they probably had decided it would be unsafe to report such actions to the computer.

He emerged from warp uncomfortably close to Bellatrix itself. Brauer was not an experienced spaceman by any means, but a warp-ship was a simple device to operate. It had a built-in safety control which saw to it that its operator could do no wrong: in the event of a materialisation in an impossible place (such as within a planet) no paradox would result; the ship would simply and swiftly demolecularise itself. In the event of a crash-landing, the ship was equipped with a device which would automatically radiate a distress-pulse on a wide-band carrier that could be picked up anywhere within a radius of twenty light-years.

He popped back into normal space not far from Bellatrix I, which happened to be at aphelion: just as well, he decided. Even half a billion miles from Bellatrix was too close to suit him.

Brauer had a definite plan of action which called for a speedy survey of the six planets, more to familiarise himself with the territory than anything else, and then a finetoothing of his two prime suspects.

He therefore brought the ship into a closed orbit around Bellatrix I, for his first look-see. And it was fairly evident that if Charcot had

landed here, he had not survived. Bellatrix I was similar in general appearance to the dayside of Sol I: its baked, blistered surface was airless and lifeless. Shimmering pools of metal lay on the sands, as on Mercury. Here, though, there was no dark side and no merciful twilight belt for an escaped convict to settle in: Bellatrix I rotated quite nicely on its axis, presenting each hemisphere in turn to the sun.

Brauer moved on. Bellatrix I had held little promise.

He approached III next, since II was currently at the far end of its orbit. III was the low-mass world dominated by herbivores; Brauer allowed himself an amused chuckle at the thought of the Ecology professor who had gravely assured him that such a situation was impossible.

He scouted low; no sign of human habitation. Of course, on a quick buzz like that he had little expectation of uncovering Charcot. But III had already been covered fairly thoroughly by government searchers, and he trusted them to do a good job—within their limits.

Similarly II. TOTIVAC had directed them to search II, III, and VI. He was willing to assume they had done it properly.

The other three planets were different matters.

Brauer took an interested look at Bellatrix II, moved on, buzzed barren IV, circled VI, and doubled back to V. As he had been warned, and as he expected, it was impossible—or at least certainly risky—to get too close to mighty V. A landing was out of the question.

Having been through the entire system, Brauer now drew back, locked the ship in a stable orbit, and, pacing the cabin, began to develop hypotheses.

"The computer," he said aloud, somewhat selfconsciously, "is primarily rational. Having made the quasi-rational deduction that Charcot was somewhere in the Bellatrix system, it then proceeded to eliminate possibilities.

"Three of the planets are so unappealing that no man in his right mind would land on them. A fourth—II—is inhabitable but scarcely satisfactory. The remaining two are possible choices for a man looking for a place to hide until the search for him died down.

"Item: Charcot stole a warship. This tells the computer a number of things. One of them is that Charcot must have landed the ship voluntarily and not crashlanded somewhere, because had he

crashlanded the ship, it would automatically have sent out distress signals. Since no distress signals were sent out, the ship did not crashland. *Ergo*, he either came out of warp in an impossible place and was demolecularised, or he landed safely on one of the habitable worlds. Probability favours the latter. Therefore, the computer suggested that planets VI, III, and II be searched, in that order."

Brauer smiled. The computer had acted in perfect sanity—with one mistake. It hadn't allowed for the possibility that a man might be so demented as to deliberately *remove* so integral a part of his ship's equipment as the automatic distress-signal. It was possible to do so, though inconceivable. But after all, what if Charcot had made a bad landing, crushed a tailfin or two, and the signal had gone off—bringing half-a-dozen unwanted patrol ships down on him in a flash?

It was possible for Brauer to proceed computer-fashion from that one alogical postulate. Assuming Charcot either landed safely or crashlanded on one of the Bellatrix worlds, then either he landed safely on one of the three habitable worlds, and thus would have been found by TOTIVAC's searchers—or he crashlanded on one of the other three planets.

Since Charcot had not been found by the TOTIVAC searchers, and since he would not voluntarily have landed on worlds I, IV or V, the conclusion had to be that Charcot had crashlanded on one of those planets.

Brauer grinned smugly. It was pure deduction—unlike the cerebrations of the legendary Mr. Holmes, whose alleged "deductions" were actually more induction. The only thing that remained was the proof.

Brauer thought feelingly of the poor dupes feeding information into TOTIVAC, back there in Upper Ontario. How they would envy him!

He readied himself for the search.

Here, too, he was able to winnow down his candidates with a little thought. Had Charcot crashlanded on either I or V, the evidence of his presence would long since have been erased by the elements. Furthermore, V was impossible for Brauer to search.

But IV, lonely, barren IV——

Had Charcot crashed there, amid the disinterested lichens, there would still be proof: the wrecked spaceship, tools, perhaps even the



body. Brauer had the most to gain by Charcot having crashed on IV, and so he chose IV to begin his search.

He expected searching to be a painstaking job. He calculated he could cover the entire land mass of the planet in broad sweeps and do the job properly in a month's time. Brauer was a patient man; he had many examples from the past as his guides to criminological technique.

No patience was needed, though. Luck, which is often scoffed at but which is a valid factor in detection, entered here—and, seventeen hours after his ship had entered the first of its search-manoevres, Brauer's elaborate construction of guesswork and deduction was solidified when his mass-detectors recorded the presence of a spaceship crumpled on the rocks below.

A pulse thundered in his ears as he brought his ship down tenderly on Bellatrix IV's forbidding surface. It was a neat landing; atmospheric check reported the air breathable, and he rushed from his ship.

A hundred yards away lay another one-man job, identical to his own. It had struck tail-first heavily, toppled, bashed its snout

against an outcrop of what looked like dark basalt. Luckily it had landed hatch-upright, so its lone occupant had been able to clamber out. The hatch was open now.

Brauer approached, looked around for some sign of the skeleton. There was none; evidently Charcot had wandered for some distance over the bare, arid world before his food ran out.

Brauer photographed the ship from several angles, then hoisted himself up and climbed inside. He blinked in surprise. The interior didn't seem to have been empty thirty years. The ship looked lived-in. *How—?*

Then he saw how. The resourceful Charcot had somehow tucked a Karster food synthesiser away in the ship before blasting off. A man could live a long time with just a food synthesiser. To one side of the machine lay a little heap of crushed lichens; evidently Charcot had been feeding lichen to the synthesiser's molecular converter and thus literally living off the planet.

Otherwise, the ship was bare—no tapes, no comforts, just a cradle and the synthesiser. Brauer lurked around until he had confirmed another of his theories—the distress signal device had been crudely but efficiently ripped loose.

He took careful photos, then climbed the hatch again.

And gasped.

A thin, ancient-looking figure, bent and angular, with a shaggy yellow-white beard, was straggling across the barren plain towards the ship.

Returning from a stroll, no doubt.

Charcot.

It had to be Charcot. Thirty years of solitude had left their mark, but behind the dried skin and unkempt beard was still the sharp-eyed face of the shrewd young criminal pictured on the telefax sheet. Half-dizzy with incredulity, Brauer scrambled down the side of the ship, jumped—felt the impact of the rock jarring his feet—and hesitantly approached the old man.

It was not until they were twenty feet apart that the ancient showed any sign of having seen Brauer. Suddenly the old man paused, wobbled unsteadily on his feet, raised one gnarled hand, pointed from Brauer's ship to Brauer.

His dry lips worked. A harsh rumbling sound came forth; after much effort, the oldster managed to shape a tremulous word. "*You—you—*"

The effort and the shock was too great. He tottered, pivoted wildly, fell forward.

Brauer was galvanised out of his numbness. He ran to the old man, knelt, slid his hand inside the ragged shirt, felt the bony chest. Silence. The silence of death.

Brauer's finger encountered something folded beneath the old man's shirt; with trembling hands he drew it out and examined it. It was tattered, depigmented with age, but still legible. It was the telefax sheet with the photo of the escaped convict. Brauer glanced from the smirking youthful face to the old man's.

There was no doubt. This was Charcot. Somehow he had clung to life, with only the food synthesiser for a companion. He had been totally alone for thirty years, without so much as a book or a pet, on lifeless Bellatrix IV.

Brauer shuddered. No doubt, Charcot had believed he was gaining freedom when he broke out of the Correctory—but there, at least, he had been in humane hands, among men who would try to provide some sort of therapy and rehabilitation. Solitary confinement was cruel, barbarous; penal codes had outlawed it decades earlier.

He had trapped himself in a prison without walls. He had lived here thirty years alone. His "freedom" had in actuality been a punishment more terrible than any court could mete out. The shock of seeing another living being again had killed him.

Broodingly, Brauer pocketed the tattered telefax sheet and kicked away a pebble. Then he shuffled back towards the outjutting hill. There wasn't even any soil on the planet in which to bury Charcot. He began to gather rocks for the old man's cairn.

Later, he subradioed a simple message to the nearest pickup-point for TOTIVAC's data-collector. It said IN THE MATTER OF THE ESCAPE OF CHARCOT, EDWARD HAMMOND—THE CASE IS CLOSED.

ROBERT SILVERBERG



Shift Case

*If man and alien met would the result
be as terrible as his dreams foretold?*

He said to himself, 'it's been talked about for centuries, written about by imaginative writers. I've even seen it depicted on the Dimensional and I've dreamed about it most of my life—I helped make it come true.'

It wasn't like the stories, or the Dimensional or even as his imagination had pictured it. It wasn't just the flicking of a switch and transit, it was——

"My God," he thought, "I'm scared." What was there to be scared about, he reasoned. Machines had made it, mice, monkeys, even a goat. Maybe it was the waiting.

Prior, the Commander, was obviously feeling it too, but his voice was calm. "Stand by to cut number one tube. Stand by to cut number one tube." A good face but unreal in the multi-coloured glow from the control bank. Red lights and green lights, lights which winked on and off. Lights which gave Prior's face, with its thin film of sweat, a painted look, a suggestion of rigid immobility, like a mask.

I've made the confounded thing too complicated, thought Ashton. I've forgotten what half the damn lights are for myself.

"Cut number two," said Prior. "Cut number two." His

voice had a hollow sound, metallic, as if it had partaken of the steel walls, the rivets, the emptiness of space itself.

"I've been out in space before," Ashton told himself, savagely. "Get a grip on yourself man, *get a grip on yourself.*"

If only there was something one could *do* but once the key was depressed it was out of their hands, they were at the mercy of machines. Those four computers, purring to themselves like round bronze cats, had to get the synchronisation to the millionth of a second, or else.

"Nothing can go wrong," he told himself. "We've done it a hundred times, a thousand, with models, machines, animals." And a tiny voice, deep down inside him, said: "Not with men, no, not with men."

Prior's face turned upwards watching the black fingers of the complicated chronometer. "Cut three and four." Little trickles of sweat ran down his temples.

"Let's go home," Ashton's mind screamed. "Let's pack in this lark and get to hell out of here." He heard his own voice suddenly, curiously even and detached. "We'd better strap in and start the count."

"Right." Prior flipped a switch. "Tony?"

The speaker crackled something blurred and inaudible.

"Start the count at——" Prior glanced at the chronometer. "O five, minus two." He flipped another switch. "Cut remaining tubes, close valves and damp out pile. Repeat, cut——."

Like a film, thought Ashton, like an old film he had once seen about a submarine. There was a similarity somewhere, only this submarine happened to be two million miles straight up. With luck—and, hell, they needed that—they were going to submerge. God knew where they'd come up—if they came up.

The palms of his hands felt damp and hot and something seemed to be twitching at the back of his neck.

There was a crackling from above him and a detached, almost inhumanly metallic voice said: "Shift count starting now." A pause. "*Minus one.*" Another pause. "*Minus two.*"

Ashton felt a hollowness in his stomach. Minus two, only eight to go, *eight*, eight seconds. Heartbeats, seconds, falling swiftly away like water, perhaps the last seconds of his life. I put myself here, helped develop the warp-drive.

"*Minus three.*"

It was like a man inventing a lethal instrument and trying it out on himself. Conquer the stars? To hell with the stars.

"Minus Four."

If only the cameras hadn't failed at the crucial moment so they could have seen what happened to the animals when——.

"Minus Five."

Oh for God's sake, Tony! What had he been thinking? Oh yes, about the animals, they'd come back alive, got to remember that.

"Minus six."

Alive, apparently unharmed. Apparently, there was the operative word and animals were not men.

"Minus seven."

He could see the hairs on the back of his hands, glistening faintly, the flesh had a wet, flaky sort of look, like a fish——

"Minus eight."

Think about something, think about anything, figures, calculus, chalked equations on a board—what the hell did they mean?

"Minus Nine."

"Click."

The click of the four computers kicking over a relay. No one to touch a shift key, only four humming machines, synchronised—one hoped—synchronised to——.

"Zero."

The ship seemed to fall into a void and something wrenched at every molecule in his body. Then he was falling, falling and falling, hurtling, plunging. He screamed. The scream was soundless, or left behind him, or he was deaf.

The universe seemed to up-end suddenly and fling him suddenly against the shoulder straps and into reality and then——

He was spinning—over and over——

Control bank—white—white—white walls? Control bank—white walls—bank—white walls—white—white——.

"Doctor Lomax. Doctor Lomax." Someone was shaking his shoulder urgently. "Doctor Lomax, wake up."

Lomax? Who the hell was Lomax? No wait, he seemed to recall——?

A hand appeared a few inches from his face, a hand holding a glass. "Drink this."

He swallowed spluttering. Lomax? Yes it was familiar. God, he was Lomax, Doctor Paul Lomax of the Geneva Institute of Psychiatry. How could he be? He was Ashton, or was he?

The liquid he had swallowed seemed suddenly to invade his

nerves. His vision cleared and with it, his memory. "My God," he said in shaken voice. "My God."

Mathews placed a lighted cigarette between his fingers. "You look as if you could use that."

Lomax inhaled deeply, then he reached up and removed the metal contact cap from his head. Carefully he laid it on the polished bench. "It can't be an illusion, it just *can't*. I've handled more of these cases than I care to think about and a fantasy-neurosis, even drug induced, can't induce reactions that vivid." Lomax made a helpless frightened gesture with a hand that shook. "I've always had complete control, otherwise a cure would be impossible, I've never lost my identity before—it's frightening."

Mathews nodded nervously. "So I found, very frightening, very frightening indeed, suppose the automatic cut-out had failed."

"I thought of that, too." Lomax rose unsteadily from the chair, crossed to the Psycho-interpreter and stood staring at it, frowning. Up to now the instrument had—apart from causes due to injury or disease—cured every psychic ill it was possible to conceive. A skilled psychiatrist could, by using the instrument, not only contact but partially enter the patient's mind, perceive the thought deviation and exert his own will power to correct it. It was, in effect, a means of correcting a patient's thought process from within in such a way that the patient continued to think in the correct way and, therefore, completed the cure himself. Lomax had cured well over three thousand cases, varying from catatonic withdrawal to minor neurosis symptoms due to strain or overwork. Always had he been master of the situation, never had there been a moment of anxiety even in extreme cases of fantasy-neurosis. Now he had run against a case which not only contradicted his long years of experience but had erased his own identity completely. For ten terrifying minutes he had been not Lomax but Ashton. Worse, it was not even Ashton's experience although it came from him. Man had only just established a base on the moon, Mars still beckoned, a star ship had yet to be invented. And yet, Lomax found himself sweating slightly, when he'd lost his identity in Ashton's, he'd known exactly how the star-shift worked. Almost, he thought bitterly, it was not only a shift in the sub-space continuum, it was a shift of identities as well. One might, without irony, refer to Shiftophrenia and have done with it, in short, the Shift Case.

He turned. "Is Ashton a writer? Some occupation requiring vivid imagination and intense concentration?"

"Intense concentration yes. Ashton is an expert in robot-

cybernetics, but imagination—the kind of imagination you mean—no.”

“Why did he consult a psychiatrist in the first place?”

Mathews’ thin, almost dedicated face looked troubled. “A minor thing, he wanted to follow a line of research outside his normal field, gradually this desire began to affect his efficiency and he came to me.”

“What was the line of research?”

Mathews made a helpless gesture. “That was why he came—he didn’t know. He wanted to construct parts for a device, about which he knew nothing, and he’d not the faintest idea what it would do or what it was for if he followed up.”

Lomax said, “Hummmmm,” noncommittally. He crossed the laboratory and stood looking down at the unconscious man in the sterile transparent cubicle. Ashton wore an identical contact cap to the one on the bench, he was unconscious from neuroscene injections but he appeared to be sleeping peacefully. There was no outward indication that he was dreaming the kind of nightmare which had left Lomax with a scream in his throat and bathed in sweat.

Mathews said: “Well?” enquiringly.

“I don’t know.” Lomax made a helpless gesture. “It’s not an illusion obviously. A fantasy-neurotic leaps from past to present, present to past, skips facts, couples illusion with illusion without rhyme or reason. This man has everything tied up as neatly as an accountant ties up assets and liabilities.” Lomax found himself sweating slightly again. “It worries me that it’s so factual, it worries me even more that I can’t control it but I find myself really terrified when I ask myself, where’s he getting it *from*?”

Mathews’ face twitched slightly. “Could it be, that through some mental distortion, he is receiving something outside himself? Like when you tune in the Dimensional to New York and somehow pick up the European Central Transmitter?”

Lomax sat down heavily in the nearest laboratory chair and said, quietly. “We haven’t built a star ship yet, what does that mean he’s picking up?”

Mathews paled slightly. “The future,” he said, in faint voice.

“Precisely, that’s what is making me sweat.” Lomax sighed and rose slowly. “We still don’t know why he gets it do we? The only thing to do is to try and find out, our first duty is to the patient, we’ll worry about the rest later. We’ll start with a mental-camera.”

It took twenty minutes before Mathews found it. “Here, I think, a distortion in normal cycles in this area.”

Lomax peered over his shoulder at the developed negative. "A minor warping of the lobe yes, probably caused by a blow on the head in adolescence, the kind of blow a young man takes at a football game and forgets about but the effects show up later." For the first time since Mathews had requested his assistance Lomax looked faintly relieved.

"At least we know that the condition will respond to normal surgery."

Mathews nodded. "But that still doesn't explain why, does it?"

Lomax said: "No." grimly. "That's the next step."

"Doctor Lomax." Matthews' voice cracked slightly. "Surely you're not going to risk further contact?"

Lomax lowered himself slowly into the chair. "I'll never rest until I've tried, I don't think I'd sleep at nights wondering." He reached in his pocket, scribbled briefly on an old envelope and held it out. "I should be grateful if you'd call in these two while I'm operating, both are close friends, both leading experts in their particular fields, if everything turns out as I hope, we shall need their help."

Mathews took the paper with nerveless fingers. "Don't you think we should seek other advice, wait before taking such a step?"

"If I wait," said Lomax, adjusting the contact cap carefully, "my nerve will be gone." He adjusted the switches in the arms of the control chair carefully, reset the original brain cycle termination figure and grinned faintly. "This is where I went out, wish me luck." His finger stabbed the connector switch.

The walls spun dizzily, an immensity of darkness seemed to engulf his mind and, as Doctor Lomax, he ceased to exist.

Slowly his mind cleared, the computers were still purring like sleek satisfied cats, the lights on the control bank still flickered and spun like dancing fireflies.

"Prior," he heard himself croak. "Prior, are you all right?"

Prior turned his head slowly, woodenly, like a marionette. A ribbon of blood ran from his left nostril, over his lip and down his chin. "Okay," he said, hoarsely.

"We took the hell of a beating." Ashton touched his ear gingerly and it came away wet.

"Yes." Prior nodded, stiffly. "I suppose it's to be expected—a jump like that." He leaned forward and flipped switches. "Tony? Anzetti? Okay?"

Metallic voices said: "Okay, Skipper."

"Come down as soon as you've cleared your instruments." He relaxed a little and dabbed at his nose.

Anzetti was first, stumbling through the narrow bulkhead door with a bruised face and a lopsided grin. With his massive shoulders and close-cropped black head he looked like an amiable gorilla. "We made it, huh?"

"We haven't checked yet." Prior sounded sour. "We took a hell of a beating getting here."

"Kid's stuff. Ever read what those first satellite boys went through?" Anzetti leaned against the wall, apparently at ease but Ashton noticed that his hands trembled.

Tony Kenton was last, a thin clear-skinned man of thirty who somehow contrived to look wizened and immensely old. He said, sharply: "Well?"

"We haven't checked yet, we were waiting for you."

"Science cannot afford to wait—even for me." Kenton smiled his thin, acid smile and crossed to the vision screen.

Switches clicked, darkness fell out of the screen and became the universe. Black immensity strewn with unwinking lights and the phosphorescent dust of distant galaxies. A universe which wheeled and swung as Kenton touched the controls with skilled hands. Constellations which were familiar, yet strange, known yet unknown because no man had yet seen the universe more than four light years from Earth.

Kenton paused to dry his hands which were unsteady and obviously sweating on a piece of waste. "We made it. Now let us see just where——."

They crowded round the screen as Kenton swung the controls so that stars raced past like countless meteors.

"Ah!" Kenton exhaled hissing with relief.

Four planets circling a pale yellow sun which hung like a blazing lamp against the black immensity of darkness.

Ashton drew in his breath sharply—Centauri had a planetary system after all. They'd leapt—no, shifted—themselves and the ship through the sub-space continuum more than four light years in less than twelve seconds. A sense of triumph and intoxication rose in his mind and was lost in the immensity of the achievement. The first hyper-ship and the first four men to leap and clutch the stars.

"Let's look, huh? Let's take a close look and see what we've got ourselves." Anzetti's voice was adolescent and high-pitched with excitement.

Switches clicked again. Kenton narrowed the vision field, swung the magnification lever over hard and punched the adjustment button.

The screen blurred, shimmered and the nearest planet seemed to jerk and fall towards them, a tumbling rock which expanded until it filled the screen.

Long flying clouds, streaming like smoke across the face of a planet. Rock and black mountain ranges, ice-capped, grinning like teeth decaying at the roots. Fiords and narrow yellow oceans which were maelstroms of foam and hurricane spume. Vast waves hurled themselves furiously and massively at towering black cliffs.

"Kind of inhospitable, huh?" Anzetti sounded awed and not a little frightened. "But a world, a real world with an atmosphere, perhaps life

His voice trailed away.

"Try another," said Prior.

There was no life on the second world. Immense oily bubbles rose in smoking seas and burst in feathers of fire and glowing incandescence. White-hot rivers wound across wastelands of ash and tumbled over smoking cliffs into seas of lava.

"God," said Prior, "God, the birth pangs of a world, the beginnings of creation—."

"Or hell," said Kenton, "it could be hell."

"Try the next," said Anzetti, "try the next."

The stars reeled again and steadied but not behind the next planet.

"What the devil are those?" said Kenton.

Ashton peered over his shoulder but his eyes had no time to register what they saw. Alarm bells began to ring all over the ship and darkness seemed to rush in and engulf him.

Lomax lay still sweating but the re-orientation was quicker this time. Mathews swivelled the recline chair to the sit position, held a glass to his mouth and brushed sweat from his face almost in one movement. His thin pink face mirrored anxiety and curiosity.

Lomax gave the drug time to work before he answered. "I seem all right but that other business—it gets worse." He allowed Mathews to remove the contact cap. "Have the others arrived?"

"Yes, Langley was here within twenty minutes, Eckart arrived about half an hour ago and is running through the recording."

"I've been out that long?"

"Well, no, Doctor Lomax, I took the liberty of giving you a shot of narcozine as soon as the cut-out flickered."

Lomax nodded. "Very considerate of you, that re-orientation

shift is pretty brutal, rather like the ancient shock treatment." He rose, a little unsteadily, frowning to himself. Could the others help? Langley was the greatest anthropologist of the age and Eckart held more degrees in comprehensive Scio-technology than any man alive but could they deduce anything from what he had to tell them? The recording would help of course but not much. The mental impression tapes would give an outline but not the impact of his own experience. It would be more like a visit to a theatre but it might suffice.

"Well, Paul," said a familiar voice, "you seem to have picked a prize one here." It was Lomax.

Lomax nodded. "Yes—do you understand the set up?"

"I think so," Langley nodded. "You use a drug to release the subconscious mind and due to mental distortion you're getting some part of the mind which psycho techniques have never touched before." He paused. "As a psychiatrist you'll admit you're only beginning to understand the powers of the mind, or it's depth?"

"Yes. What are you driving at?"

"Nothing yet, just asking a question. What do you think you're getting?"

Lomax shrugged. "I could be getting the answer to a million guesses. I could say it's the future, a parallel universe, another dimension, even something from another life form in another universe."

Langley took out a pipe and began to load it slowly. "If he were getting another life form, how would you account for familiar conceptions, such as names, places, etc?"

"Although his conscious mind is in artificial sleep, the experience must come *through* the mind which, even in a dream state, would render alien conceptions into understandable terms."

"I see." Langley lit the pipe. "Then a pink quadruped which smelled, the mind might translate into the nearest parallel, a goat."

"That's rough, but accurate."

"Similarly with time and conceptions, there might be a star called Gobbledehook in another universe but Ashton's mind renders it in familiar terms—Centauri?"

"Yes," Lomax nodded quickly. "It is the tendency of the mind to rationalise the unfamiliar into familiar terms."

Langley puffed smoke slowly and nodded to himself. "It could be a lead, have to work on it more."

The door to the recorder room opened and Eckart emerged; he was scowling. "What are you boys trying to do? Get yourselves

another patient the easy way?" He ran blunt fingers through his mane of iron-grey hair and said: "Hyper-ship," bitterly.

"You understand the conception?" Matthews' voice was high pitched with surprise.

"Oh yes." Eckart nodded angrily. "I understand it all right. When the recording started I had a wonderful dream about using an alien technology to change the face of the Earth—some dream." He sighed. "When I was a kid I read a wonderful story about a scientist who invented some sort of time gimmick to see into the future. He used it quite effectively, I remember, to purloin super weapons from his remote descendants, unfortunately there's a catch." He glared at them almost accusingly. "I can build you a hyper-ship now. All I need is a length of sorexexham tape-wire, to build a helix round two opposing Steiger tubes." He stopped.

"What," said Matthews, after a pause, "are Steiger tubes?"

Eckart nodded. "Yeah, you tell me, what?" He made an angry gesture. "What's sorexexham tape-wire?" He sat down heavily in one of the laboratory chairs. "You see my point, don't you? Suppose I asked a sixteenth century citizen to fetch a Lockman spring valve for my turbo car. He might even understand the principle of a turbo car if it was explained to him but what the hell is a Lockman spring valve?" He sighed again. "What now?"

"Ashton," said Matthews quietly, "has a minor fixation which must be erased before surgery. The technique for this is an hypnotically induced illusion that he is actually following his urge. What he does in that illusion is depicted in picture form on a menta-screen, we may learn something there." He turned to Lomax. "By the way, Doctor, when do you think we should start?"

"Not yet." Lomax was striding determinedly towards the recline chair. "Not until I've found how this thing ends."

There seemed no lapse of time between unconsciousness and awakening, yet Ashton realised that time had passed. In the first place, he could move his head but not his body, he, and the others, were propped against the bulkhead wall like dolls in the display window of a store. Third, and most important, their numbers had increased by four—four slate skinned humanoids in skin-tight uniforms who studied the instruments and conferred together in low voices.

Ashton thought: "I'm dreaming, this can't be true." Yet the aliens were like nothing he had ever imagined or seen depicted in the current spate of futuristic Dimensional programmes. They were

compact wiry men with colourless eyes and thin almost lipless mouths. Human enough to be called men, strange enough to be utterly and frighteningly alien.

One of the humanoids crossed the control room and stood in front of them. "You understand me?"

Prior swallowed. "Yes, we understand you." His voice was hoarse.

"You wonder how? It is really very simple. The little box on the floor between us is tuned to our respective brain cycles and acts as an interpreter, it translates the brain impulses into understandable symbols." He made a casual gesture of dismissal as if such devices could be purchased at any store.

One of the other aliens crossed, removed a small instrument from Prior's wrist and studied it, frowning. He had a gaunt, high cheek-boned face and curious gold insignia on the high necked collar of his uniform. Ashton assumed he was the leader of the party, probably an officer, and realised, with a sick feeling inside, that they had been captured by an exceedingly militant race.

The Alien handed the instrument to one of his companions and stared at them for a long time expressionlessly. When he spoke, the brief contemptuous sentence was almost explosive in its implications. "You—again," he said.

They stared at him blankly, uncomprehending.

"I see you do not understand me." He sighed, almost humanly. "Records are lost in defeat and a race forgets." He sighed again. "You are a life form known to us as the Morgthu, once you ruled a galaxy. You were defeated by my remote ancestors and your Empire brought under our rule. Presumably some survivors escaped, found a habitable world and climbed again to the stars. This is obvious for you are back, but you are still the same." He waved a hand indifferently at the equipment. "Science for the sake of science, according to history you were a race of dreamers and philosophers. When our ships first entered your sphere of influence you wanted"—his mouth twisted with contempt—"to live in peace with your alien cousins and, of course, you were ignominiously defeated." He gestured again. "You have not changed, technically brilliant but unrealistic, no weapons with which to defend yourselves, no warning system, no personal devices, such a people do not deserve to survive."

"I suppose you are going to kill us?" said Kenton in a detached, almost indifferent voice.

"You, personally? No. We shall shackle you to your control chairs, set your instruments and return you to your point of depar-

ture. A tracer will be placed on your vessel and a section of our fleet will follow almost immediately."

"You're going to wipe out the whole race?" Prior's voice was loud and angry. "You're going to carry on a war you yourselves started countless generations ago and on a people who have never offered you any harm. What vengeful sort of philosophy is that?"

"Let us not lose ourselves in personal issues or melodramatics. We are a prolific race, so is yours. You will spread out and colonise worlds, we are still doing so. Sooner or later we should meet, sooner or later we should both want a particularly favourable world and that would lead to war. We are realists, we foresee the situation and take measures against it before it occurs. We do not hate you, we are not vengeful, but as our survival as a race depends upon continued expansion we must remove possible hindrances before they occur. History is full of races who try to negotiate round reality but when expanding populations devour reserves and living accommodation becomes too congested to support life, negotiations are forgotten. It is the nearest habitable worlds or perish. As realists, we see the inevitable and therefore you must be removed, as other intelligent races have been removed, lest, one day, you hinder our expansion."

"One day you'll bite off more than you can chew," said Prior, angrily.

The alien shrugged. "Perhaps, but we have met and fought many races and our survival, surely, is proof of our success." He smiled with his slit of a mouth. "Our military leaders are not disturbed by the resurrection of the Morgthu and our officer cadets will welcome your appearance as practical training. We shall not release front line combat troops for *you*, any raw recruit can defeat a race of military incompetents, but, of course, you don't remember, do you, your records were lost in the last defeat."

Ashton found himself struggling wildly to break the paralysis which locked his limbs. He'd show the cold-blooded cocksure ———. But the final words never came to his mind, suddenly everything went black.

It was an injection of andrenothalene that brought Lomax upright and trembling in his chair.

"God, we thought you were dead. We couldn't bring you round." Mathews wiped sweat from his face. "I'd better give you another counter-injection to tail off the shock effects." He began to ready another hypodermic with hands which were none too steady.

"Well?" said Eckart.

Lomax made a gesture. "It's over, I think, everything suddenly stopped—phut, like that. It was as if a tube had blown in a Dimensional set in the middle of a programme."

Eckart nodded. "I'll work on the tapes later, in the meantime they're starting on Ashton in half an hour and I must get that in first, maybe I'll get something there I can use." He paused. "You'd better lie down for a couple of hours, you look all in."

"Perhaps you're right, but after that we'll hold a conference."

Eckart said: "Yes, sure," and went away. The conference had to be postponed until he returned, he was gone for five hours. When he finally returned to the conference room he slumped heavily into the nearest chair, scowling.

"The operation was a success?" Lomax asked, formally.

"Completely, a couple of days will see him back at work." Mathews lit a rare cigarette. "He'll never know, thank heaven, just what came out of his mind."

"Anything practical come through on the menta-screen?"

Mathews hesitated. "Er—yes, the fixation urge appeared to be symbolised quite rationally on the screen, pictures, symbols, mathematics."

"Anything we can use?" Lomax was looking at Eckart.

"Eh? Oh, yes." Eckart's mouth tightened suddenly and he leaned forward holding a notebook. "Our friend, Ashton, consciously or unconsciously, wanted to build a rather nasty little weapon." He tossed the notebook on the table. "I don't think there's any doubt that Ashton was somehow getting the future, the weapon will only function in a vacuum." He paused. "Anything coming within four thousand miles of a space ship fitted with this thing would go up phut like a flash bulb. There is even provision for a recognition tape so that the weapon can discriminate between friend and foe." He paused and shifted uncomfortably in his chair. "You know, I wish I'd never come into this business at all. If man can perceive the future, then the future must be already determined and that I don't like."

"If it was the future," said Langley. He took out his pipe and began to load again. "I have reasons for supposing otherwise."

"Any proof to support it?" said Eckart quickly.

"If you will accept logic as a proof—yes." He lit the pipe and puffed smoke thoughtfully, then he grinned. "You're all going to get damned impatient but I'm sorry, I'll have to explain this my way or I won't make my points." He paused and looked quickly

from Lomax to Mathews. "You are individual psychiatrists, you take the single unit and put his, or her, thinking right. I, on the other hand, as an anthropologist, might be described as a mass psychiatrist, I study the group, not the individual." He paused and leaned forward. "As a race, the human race, we are the most frightening psychotic mess in the universe. The highest possible ideals and conceptions go hand in hand with the most debased behaviour patterns it is possible to conceive. The human race is psychotically suspicious, treacherous, cruel and aggressive and now I understand why—as a race we have an inferiority complex a mile wide."

"Here, wait a minute. I hope you're going to add some proofs." Eckart was looking flushed and angry.

Lomax motioned him quickly to silence. "As a psychiatrist I must agree. An individual with a sense of inferiority reacts by endeavouring to compensate, he usually becomes loud and aggressive."

Eckart grinned. "Sorry, it's out of my field, it just got me mad for a minute."

Langley grinned back at him. "It would. You, too, have an inferiority complex a mile wide, so have I, we all have. That, by the way, is my first point. The second is the obvious differences between man and beast. A beast is born with its knowledge ready for use, it does not have to be told who are its enemies, what and what not to eat—it knows, and that knowledge we call instinct, or, if you prefer it, racial memory. Man, on the other hand, is born without knowledge in order that he may gain through acquiring it, but—who knows?—might there not be some instinct, or racial memory in the unconscious mind?"

Eckart, who had been about to light a cigar, dropped his lighter. "My God, Langley, I'm beginning to see what you're driving at. What we got from Ashton was not the future—it *was the past*. We tapped his racial memories." Eckart was on his feet almost spluttering in his excitement. "The slight distortion in Ashton's mind caused him to get a fraction of it, too, enough to bring out his desire to stop such an event occurring again. He wanted to build a weapon to take care of those things, but all he got was the urge to build without knowing why. Probably Ashton is a direct descendant of one of the original travellers."

Langley was still calm. "A race leaps suddenly from the steam engine to atomic motors in less than two hundred years. Is it because

they are suddenly extraordinarily clever, or is it because, at a certain stage in their upward climb, their racial memories are slowly remembered and old ingenuity put to use?"

Mathews said, nervously, "I get the implications but it's still a little hard to link up."

Langley knocked out the pipe and began to refill it. "Once our ancestors achieved the peaceful conquest of a galaxy. Presumably they were a race of idealists and philosophers—perhaps they'd always had it easy. Then came our slate-skinned friends as the invader, efficient, ruthless and quite without pity. Our ancestors were no match for them—presumably a few escaped, found a habitable world, started afresh and climbed again to the stars." Langley's mouth twisted a little. "Their very first hyper-ship was captured by the original invader and history repeated itself. One can only assume that this time only a handful escaped, perhaps a mere dozen. They had to take the first world that came and such a small group could not maintain itself, they degenerated to the level of the beasts and lost everything but their ability to procreate the species. It was a rough, tough, primitive world and they had to fight and keep on fighting to survive. The race increased, progressed, and grew tough, but in the unconscious part of their minds was the knowledge of cowardice and repeated defeat, the surface manifestation of which was the vast inferiority complex of which I have spoken. Man could not bear to feel inferior to anything, when he conquered the animal world he fought his own species and now"—Langley paused and lit the pipe—"he is, once more, climbing to the stars." He drew on the pipe thoughtfully and stared upwards at the ceiling.

Unconsciously their eyes followed his and Lomax realised suddenly that Langley was inwardly looking far beyond the room—mentally he was looking at the stars.

"Yes," said Langley softly and half to himself. "Our history is perhaps as bloody as yours now. By God, we've really learned to fight down here. . . . When we come back, and we shall come back, my friends, we'll come out ready and equipped to deal with you, we have a very old score to settle. . . ."

PHILIP E. HIGH

Necessity

To increase the population of Earth by even one was a momentous decision and implied acceptance of the unavoidable consequences

Illustrated by Gerard Quinn

Purbright had been inside the City Hall before, but on none of his earlier visits had he held his shoulders so smartly back, or his chest so proudly forward. Nor had he stepped with the zestful spring that now bounced him up the steps and across the entrance hall to the central desk that had suspended above it the sign "INFORMATION".

The blonde receptionist eyed him approvingly. Purbright was a good-looking man under normal circumstances, and now he unknowingly excelled himself. He answered the tactfully flirtatious smile that greeted him from across the counter with a wide and infectious grin that displayed his excellent teeth to their fullest advantage.

"I wish," said Purbright, "to register the forthcoming birth of my son."

His eyes glowed with manly pride. Although the receptionist

could do no more than direct him to the necessary department, he found it impossible to restrain himself from telling everyone with whom he came into contact. Even the postman and ticket-collector had offered their flat-toned, metallic congratulations to his happily confided news.

The blonde's smile was more practised than sincere.

"Congratulations. Department 540B on level 17 for the registration of Births, Deaths and Disposals. They will direct you from there if you should require Personal Disposal." She couldn't refrain the query, "Your first?"

"First it is," said Purbright, happily. "The first of what we intend to be a large and thoroughly happy family." He bounced his fist off the desk top with no pretence at concealing his enthusiastic anticipation. "And by golly, if I feel as good as this every time, we may even consider a few extras."

He laughed, touched his hat, and stepped bouncily across the floor to the elevator cages.

The elevator that carried him to level 17 contained a handful of other passengers who, before two flights were passed, were also sharing Purbright's joyous news. Congratulations were offered. The stoop-shouldered, sand-coloured man next to him eyed him sideways and was the last to speak.

"Your first?"

"Sure thing. Golly, if I feel as good as this every time said Purbright, cheerfully.

The sandy man said, "Felt the same way myself. Just goin' down to register my third. Can't help wonderin' if it's mine." He smiled a slightly wry smile. "And you'll find that glow dims just a little each time, conditions bein' like they are today."

The elevator eased to a halt. Purbright, showing proper respect for seniority, followed the man from the elevator and paced him down the long, brightly lit corridor.

"Hope you don't mind my asking," he said. He cleared his throat. "This Disposal business. Do you handle it personally, or . . .?"

"Heck, no," said the sand-coloured man. "With a guy who's made for the job at your disposal . . .?" He saw the unintentional witticism, and laughed briefly. "What's the point? Sure, we're conditioned for it an' all that, but it ain't exactly what you'd call a pleasant business." He stopped by a door. "This is it."

"There is—well—the moral aspect of it," said Purbright, feel-

ing slightly embarrassed. He felt his colour rising a little. "I mean ."

"Sure," said the sandy man. "Sure." He cocked his head on one side and eyed Purbright, curiously. "But you ain't thinkin' of doin' a personal, are you, friend? Take a tip, an' leave it with the experts. I know there ain't any actual nut-cases any more, but there's a couple of guys in our block ." He shook his head. "Same thing in both cases. Did somethin' to their memories. Bad deal." He shook his head, and cocked it again. "You wouldn't want to run that kind of risk."

He saw the set of Purbright's jaw, and shrugged.

"O.K., friend, they're your memories. Me, personally," he nudged Purbright, and winked expansively. "I got a few I wouldn't run the risk of losin'. Savin' 'em for my old age."

He guffawed, entered the door, and vanished into a booth with a sliding door. Purbright entered another booth and studied the panel facing him. On it were three buttons, alongside them small lettered plaques. The green button was marked BIRTHS, the black one DEATHS, and the red one DISPOSALS.

Purbright, pressing the green button, wondered vaguely just how much thought had gone into the colour selection.

A green light flickered directly in front of him on the panel.

A voice said, "Name?"

"Leonard Foster Purbright."

"Address?"

"Apartment 609, level 95. Wilmott Building, downtown."

"Age?"

"Twenty-eight."

"Date of last conditioning?"

"September 12th."

"Occupation?"

"Advertising art director," said Purbright, proudly. His appointment was only two weeks old.

"Married or single?"

"Why, married," said Purbright, slightly shocked. He was a rather strait-laced young man despite his regular conditioning.

"Expected date of birth?"

"May 23rd, 2082."

"Sex of child?"

"Male."

There was a click and a whirring sound behind the panel. The voice said, "If you require automatic Disposal Selection and Execu-

tion, then that is all. If, however, you wish to handle the necessary formalities yourself, please press the red button at the top of this panel."

Purbright did so. A red light glowed.

A voice said, "Personal Disposal. Do you wish to receive all instructions in this booth, or would you prefer an interview? If this is your first Personal Disposal, an interview is strongly recommended."

Purbright said, "We-ell." He rubbed his lower lip with his forefinger. "An interview, I guess. ."

More clicks. The voice said. "As you desire an interview, please proceed at once to the next office in this corridor. It is clearly marked Disposal Interviews and Instruction. Mr Markley will attend to you."

There was a final-sounding click, and the red light extinguished. Purbright left the booth, went out into the corridor, and peered at the next door on his right. Black lettering starkly informed him that he could register the death of any Personal Relative. He shuddered, turned to the left, and found the door that he wanted, lettered brightly and clearly in red.

"Mr. Purbright? Sit down." said the man on the other side of the desk. He was just short of middle-age, conservatively dressed and quietly genial in manner. He tapped his fingers lightly on the paper in front of him. "I understand that due to the forthcoming birth of your son—congratulations, by the way—you wish to handle the necessary Disposal yourself?"

He eyed Purbright keenly. Purbright nodded.

"That is so."

"Personal Disposal," said Markley, "is, as its name implies, purely a personal matter. It is the individual's choice, generally due to the possession of a superior sense of civic responsibility, coupled with an A-plus guilt complex."

Purbright looked modestly at the floor.

Markley said, "What I am going to tell you now you possibly know as well as I do, but it's part of my job to put the case for Disposal as clearly as possible, so that the individual undertaking this unfortunately necessary task is quite clear as to all its implications." He smiled pleasantly.

"Quite so," said Purbright.

"Disposal," said Markley, "was introduced as the only possible method of maintaining civilisation on a reasonably even keel. When

our ancestors started playing around with the atom in the middle of the last century, they expected it to have some effect on unborn children, but its final results they simply weren't prepared for. There was a mild sprinkling of the mutations that had been forecast, but the unexpected came with the doubling of the international birth-rate in the nineteen-sixties. The definite emergence of virgin births in the seventies really put the lid on things—by nineteen eighty-two the world population was three times the size that it had been at the beginning of the sixties. Science nearly wore itself to the bone trying to develop new methods of agriculture suitable to the hitherto uncultivated areas of the globe, but with only limited success. Concentrated food, while maintaining the necessary calory level, was unsuitable for any lengthy period. To function correctly, a body must have bulk to work on. As far as space travel is concerned, so far we've only reached the Moon and Mars, neither one as yet fit to consider for colonisation. When we reached absolute population saturation in the final years of the last century, the World Government decided—extremely reluctantly, I hardly need say—that organised Disposal was the only answer. It was only to be a temporary measure—the scientists had promised us space-travel by 2020 at the very latest, but, as you know, it's only been in actual practice for the last fifteen years.”

Markley hunched forward in his seat.

“Therefore, while still only a temporary measure, it has had to be maintained for a good deal longer than was originally intended. The one really good thing that's resulted from all this, of course, is the unanimous agreement to ban all further use of atomic power except under the most carefully shielded conditions—and then certainly never for any purpose in the least warlike.” He laughed humourlessly. “Quite unwittingly, our ancestors provided themselves with the exact opposite of the situation that they had anticipated and, of course, the absolute necessity of World Government. Atomic bombs were intended as a ruthless means of reducing the population of an opposing nation, but the long-term effect that it produced rendered its purpose quite useless.”

Purbright nodded, smiling. His conditioning prevented him showing any of the slight irritation that he was feeling at this, he thought, rather unnecessarily lengthy introduction, but silently he wished that Markley would reach the more immediately relevant details of his own particular case.

“Well,” said Markley. He placed his elbows neatly on the desk in front of him, and bridged his hands. “When mankind

finally realised that the penalty of his folly was to eliminate a necessary percentage of his fellow-men, a large part of the population felt the first real gnawings of conscience regarding the situation that they had created. While approximately forty-two per cent. were agreeable—you might say relieved—at the idea of Disposal being handled by squads of androids specially constructed for the purpose, the remaining fifty-eight, suddenly filled with an overwhelming sense of civic remorse, demanded that they personally be given the task of handling the situation themselves—under strict supervision, of course. Under majority pressure, the Government conceded the point, thereby laying the foundations of the situation that exists today. Of course, adjustments had to be made. Quite a few of the early cases had a tragic aftermath—while some men were reluctantly willing to handle the formalities themselves, a great many of them were emotionally unfitted for the task. There were many mental breakdowns following the completion of Personal Disposals—more than just a few cases of complete insanity. The immediate reaction was a wholesale retraction of public opinion. Men that had been grimly determined to support the crying out of their consciences suddenly found themselves floundering on the brink of indecision. Disposal by androids seemed about to take over the situation completely, when conditioning was suddenly introduced as the answer, and that to the great relief of the Government, I might add. Heartened initially by the showing of public remorse and the willingness to atone as best it was able, it fully appreciated the implications. Man had created an intolerable situation for himself, his fellow-men, their wives and families. Now, with bowed head, he was admitting his guilt and his humble desire to pay for his mortal sin. Had Disposal become purely a Government function with which no man need soil his hands—which badly needed soiling for the sake of his own awareness—then his at last awakened loathing for war and all that it implies would, in all probability, soon relapse into its former deadly stupor. A catastrophic situation.”

“Appalling,” said Purbright. He barely stifled a yawn.

“As you say,” said Markley, “appalling. Conditioning was the answer. It provided those who chose Personal Disposal with just the right amount of stomach for the job, without in any way lightening their burden of guilt—in the case of the victim, it helped him accept the inevitability of the situation. Both, therefore, are now conditioned to submit to their unpleasantly necessary social responsibilities. And, incidentally, we haven’t come across one case of a conditioned man, forced to kill from necessity, ever doing so again,

purely from choice." Markley leaned back in his chair. "It has, by the way, helped him to be more rational, tolerant and discriminating in his general outlook, but that, as far as we're concerned, is purely coincidental." He laughed, and rose to his feet. "There you have it, Mr. Purbright, and I'm extremely sorry I've had to bore you with it all."

"Not at all," said Purbright, politely.

"Which brings us right up to date." Markley's briefly friendly manner reverted to a briskly impersonal one. He walked over to a grille set in the wall, snapped up the cover, and extracted a sheet of paper. His forehead creased, he paced slowly back to his desk.

His gaze snapped up to meet Purbright's.

"George Edward Vaughan. Does the name mean anything to you?"

Purbright shook his head, decisively.

"Not a thing."

"Excellent." Markley sat down, held the paper in front of him, and read the contents aloud. "Age, 55. Address, 90432, Fairway Avenue, Long Island. Occupation, robotics draughtsman. Married, one child, born January 7th, 2060, now deceased."

He cocked an eye at his visitor. Purbright ducked his head, sympathetically.

"Conditioning rating, A-minus." Markley paused momentarily, and fingered his chin. "Present employer, Willard and Greenberg, Robot Refinements, Long Island." He inserted the paper into a waste unit beside his chair. "That's your man, Mr. Purbright. Now." He rose again. "The actual disposal."

Purbright's pulse quickened slightly.

Markley strode to a panel on the wall behind his desk and depressed a red button, edged with a thin black line. The panel slid aside. He reached into the opening and produced a small plastic case. Like the button, it was red with a black trim.

Markley said, "One disintegrator, PD5097." He hefted the case in his hand. "A good, reliable weapon, and a definite improvement on the things *we* used to use." He smiled at Purbright's look of polite enquiry. "I have two boys and a girl."

He handed the weapon to Purbright, who slipped it into his jacket pocket.

"Well, your instructions should be just about ready."

He clicked up the grille, extracted a second sheet of paper and an envelope, and glanced at the paper.

"Your Disposal unit attends a poker game with friends

every Friday evening at an apartment situated four blocks from his own. Apartment 974, Connaught Building." He looked up at Purbright, and smiled slightly. "These men of habit provide the least trouble. Looks as if you've struck lucky this time". Purbright nodded, smiling. "The game terminates without fail at 10.30, after which he returns to his own house on foot. The approach end to Fairway Avenue, which is on the corner of Fairway and Pleasant, has a thick-trunked maple tree at the pavement's edge. You'll wait for him there, and complete the Disposal without letting him know of your presence in any way". He looked at Purbright, hard. "In any way, Mr. Purbright. This must be definitely understood. A man. . . ."

Purbright said, frowning. "Doesn't that seem a little hard? I mean, a final prayer or something of the sort. . . ."

Markley shook his head, firmly.

"Definitely not. A man who is nearing Disposal age and hasn't done his praying well in advance only has himself to blame. This way is, believe me, the humane one. The whole thing is over and done with in the fraction of a second—no last minute seconds of terror, no time for his conditioning to become deranged. Conditioning is thorough, but the ingrained sense of self-preservation is never entirely subdued". He watched Purbright, keenly, then glanced back to the paper in his hand. "Friday. That gives you two days to familiarise yourself with the chosen location". He placed the slip in the waste unit, and handed Purbright the envelope.

"In there you'll find identifying pictures and a copy of all necessary details, but you need have no fear of disposing of the wrong man. The surrounding area will be screened by a Disposal Supervision squad. Should your unit, for any reason, make an unexpected change of plan, you'll be notified on the site. Best of luck, and a tidy Disposal. Please return the weapon to us first thing on Monday morning. We'd appreciate you doing it yourself". He smiled. "It should be old hat to us by now, but we still like to hear personally from you first-timers just how you make out". He clapped Purbright on the shoulder. "You're quite confident you can handle this? If you have any doubts at all, you only have to say the word"

"Quite sure", said Purbright. He looked grimly determined. Markley laughed, and pummelled his arm.

"O.K. then. And if any slight errors in planning should occur we'd be glad to hear of them when you report in on Monday." He smiled again at Purbright's suddenly creased brow. "Not a thing



for you to fret over, Mr. Purbright. We've got this thing down to a fine art, but there's no such thing as *absolute* perfection, you know."

He held out his hand.

"First thing on Monday."

"First thing," promised Purbright.

He left, smiling.

Markley rounded his desk, sat down, tipped his chair back, gazed at the ceiling, and addressed it.

"Did you get all that?"

"Got it," said a voice. It came from a vent that could have passed for an air-conditioning aperture. "I almost hope we get a chance to work on this one. We got a good shot of his appendix scar. It's a brute. Should give tech something in the way of testing their mettle. What do you say?"

Markley looked at his desk with hooded eyes. After a moment he nodded.

"I think I'll get over there straight away. Vaughan's rating makes him a pretty bad risk, and I haven't missed on any of the last

twenty-five or so." He pushed himself upright. "Anyway, it'll be good practice for them."

Unconsciously, he hummed a few dirge-like bars of one of his favourite hymns as he left the office.

The branches of the maple stirred faintly above Purbright's head. He shrugged a little deeper into his coat. The evening was clear, and a little colder than he had anticipated. He hoped he wasn't going to be in for too long a wait. A little derisively, he considered the point that for all his extraordinary technical advance, man had still to produce a sure-fire prevention or quick cure for the common cold.

For the twentieth time, he mulled over his decision to ignore Markley's final advice regarding the wretched business. All right, so maybe his unit *had* done plenty of praying beforehand. That didn't alter the fact that he might be a deeply religious man, who'd appreciate this final gesture on Purbright's part. He felt, humbly, that he owed him at least that. Someone who gave his life before his allotted time, so that another might be born. . . .

He shuddered, and gripped the disintegrator, his head slewed to a listening position, his breathing shallow.

Footsteps sounded around the corner.

In spite of the coolness of the evening, sweat popped onto Purbright's face and hands. His fingers tightened on the weapon in his pocket, and he bent slightly at the knees. Crouched in the shadow of the tree, he peered with narrowed eyes at the street corner, bright in the light of an overhead lamp.

His Disposal unit rounded the corner, moving briskly. In the light, he was a sallow, lined man, dressed in the nondescript one-piece grey coverall of the centrally graded worker. His left arm swung easily, his right hand rested in his leg pocket.

Purbright, his mind a jumble of warring emotions, the disintegrator hard and ready in his hand, stepped from the shadows into his path. The man stopped abruptly, backed a step. A choked syllable came from his mouth. Purbright saw the frantic jerk of movement.

He said, hoarsely, "Vaughan, I want you to understand how badly. . . ."

Even as he commenced the carefully rehearsed line, he realised his appalling mistake. Markley's eyes hard on him, his words of warning, based—why hadn't he seen it then?—on facts, experience. Even as the power from the weapon in the man's hand slammed

numbingly against his body, he knew that he was not the first to die.

The darkness rushed in and took him.

The man in the grey coverall had taken two steps before cross-fire of deadly precision lashed at him from both sides of the street.

Markley pursed his mouth, sourly. He looked from his desk-top to the figure that stood in front of it, then back to the desk again.

"As we expected."

"Exactly," said the android. His stance was the formal one of the reporting soldier. "He did the foolish thing, and let his presence and intentions be known. 404 and myself took the necessary precautionary action." He indicated one of the two disintegrators on the desk. "It's an old-type Purley Rex IV. Difficult to say where he got hold of it, but when a man nears Disposal age, if he's a deviant, it's amazing how far he'll look to save his skin. An outdated sense of self-preservation in these times. ."

"All right, all right," said Markley, testily. "I don't have to be told by you fellows how backward your creators are." He ignored what could have been derision in the android's eyes, and stared broodingly at his blotter. "Noble, mushy-minded homo sapiens. We'll never breed out the sentiment, and thank God for that, even though it costs what it does in a case like this. How many of these conscience-ridden heroes do you think we'd get if they saw real danger in it for themselves?"

He shrugged, and rose.

"On with the show." He reached for a folio on one side of the desk. "I had the tech boys ready for this one almost as soon as he left. Seems they have almost as much respect for my judgement as I'm beginning to develop myself. I had a report from production about an hour ago. He's finished, and ready for school."

"Quick work," said the android.

"We have to be quick. We've been chased once or twice in the past by panicky relatives with regard to the delay in the return home of their loved ones. Questions of that sort provide painfully bad advertising for the system as a whole. At the moment we're keeping our heads above water, but any sort of major increase, and we're likely to find ourselves way out of depth. Production couldn't cope." He clamped his teeth on his lower lip, and smiled sadly. "And the best laid plans of mice and men. . ."

"Pardon?" said the android.

Markley ignored him.

"They should be here soon. You'd better go and get your report on file. Take these with you."

He handed the two weapons across the desk. The android took them, nodded formally, and left the office.

An inter-office communicator on Markley's desk buzzed. He depressed a switch.

A voice said, "Schoolroom. Would you please come down at once and bring the Purbright file with you. The pupil is ready for his instruction period."

"Right there," said Markley.

He clicked up the switch, picked up the folio, and left the office.

He took the elevator to a lower level, walked down a corridor, and entered a room with bright green lettering on the door. Four men, three in technicians' uniforms, the fourth in the dark green of a supervisor, were huddled round a seated figure in the centre of the room. The supervisor looked up, nodded, spoke to one of the other men, then joined Markley. He nodded towards the group.

"Done to a turn," he said. There were dark rings around his eyes, but he carried the air of a man who has just completed a job to his own satisfaction. "He has an appendix scar that may be lacking a little in the final details. ."

Markley looked at him, his eyebrows raised.

"He'll do," said the supervisor. He smiled at Markley with the blasé patience of the expert. "I don't fancy even his wife knows how many stitches he has in it."

Markley said, "One of these days you boys are going to find yourselves with a tattooed man on your hands. It's still a risk."

The supervisor shrugged.

"Jump your fences when you get to them."

Markley said nothing. He looked for a long, silent moment at the group in front of them. One of the technicians was doing something to the seated figure's left ear. The others silently checked a list. Pencils flicked sharply down the page.

The new, immaculate Purbright sat stiffly upright, his hands folded formally in his lap, his feet neatly side by side on the floor. His face was completely devoid of expression.

The technicians stepped back, one wiping the tool that he had been using on a piece of tissue, the others flipping shut their notebooks and pocketing pencils.

"Ready," said one.

Markley bowed his head and clasped his free hand around the one holding the folio. The others standing in the room followed

suit. The figure sat, unmoving, its empty eyes directed straight ahead.

Markley said, "And now that man has taken unto himself the mantle of the Creator, let him teach his children well, so that the child may in his turn become the teacher of Thy blessed word. Now he takes unto himself a wife, and soon a child. Let him guard them, feed them, and teach them according to Thy Holy Ordinance. And have mercy on we, the guilty. In the name of God, the Father of fathers. Amen."

He raised his head, stepped forward, and stood in front of the seated figure. He opened the folio, cleared his throat, and said, "As you have already been told, due to an act of necessity that your place in society has forced upon you, you are in a state of shock which has resulted in total amnesia."

"Amnesia," said the figure.

Markley said, "Repeat after me. My name is Leonard Foster Purbright."

The android said, "My name is Leonard Foster Purbright."

ROBERT TILLEY



BACK NUMBERS

In response to requests from a large number of readers we are again offering back numbers of NEBULA for those who are unable to obtain them from their usual supplier.

All issues from No. 11 to No. 26 can be had for 2/- or 35c. each post free. All other numbers are permanently sold out.

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159 Crownpoint Road, Glasgow, S.E.*

Verdict

The situation had been carefully assessed and the machine pronounced its verdict with the logic of infinite consideration

One of Marnier's favourite complaints was that the law did not allow him to test a man to destruction. He claimed this deficiency placed Personnel at an unfair disadvantage with the other departments of the great interplanetary terminal in the heart of Australia. Every other department, from Computers to Shipbuilding, could make prototypes of their machines and discover any inherent kinks by subjecting the prototypes to stresses and strains far beyond any that would be encountered in actual use. But Marnier was not allowed to go nearly so far when selecting men for posts at the terminal. And every time a man was later found to be flawed, Marnier would excuse his department with the same complaint.

When the news of the murder came chattering through the ticker machine, he was looking out of the window, idly watching the variety of animal and humanoid life that was sporting on the beach at the edge of the vast lake seventy storeys below. From his high vantage point it was impossible to distinguish terrestrial from alien and the ticker interrupted just as he was formulating a philosophy on the fact.

He tried to ignore the chatter. He looked across the lake to

the other administration buildings and wagered with himself that *they* were having it easy as usual. Nothing ever went wrong in *their* departments.

He sighed. It was months since anything had gone wrong in his department. Other men might have put this down to a final perfection of their methods. But Marnier was a pessimist and a realist; the lull would not last. He turned reluctantly to the ticker and tore off the tape.

It took a scowl of self-restraint to suppress his desire to smile; the trouble was not his to worry about. Law and Immigration would certainly be involved. Semantics and Ethnology would probably come into it too. But the most that would be required of Marnier and Personnel would be a few words of testimony and a scribbled signature or two.

Murder had been done. The wife of a local technician had been killed. The killer was a visiting alien—and on that account Marnier was able to breathe easier.

He was on his way back to the window and the vista of peace when the ticker had an afterthought and belched a few more inches of tape. He detached the tape, scanned the message and swore. He could see no reason why he had to be involved in this thing but the message ordered him to Supreme Control and Marnier had no wish to be the first man to disobey a summons from there. His nose was clean for the moment. He wanted to keep it that way.

The trouble with Supreme Control was that you never quite knew who you were dealing with. The tremendous central building which could lay its shadow halfway across the great lake at sundown was suppose to house the men and machinery for integrating the work of other departments. But more people than Marnier firmly believed that it was just as departmentalised as their divisions—only more so—and that no department knew what the others were doing. Men of singular interests tend to make such statements about what they disparagingly regard as office types.

The truth was that Supreme Control functioned with remarkable efficiency, considering that it had to do with the constant coming and going of ships and travellers from more planets than had been dreamed inhabitable a century earlier. The fact that you never knew who you were dealing with was only a minor truth.

Marnier walked into Room Eleven-Seven feeling pretty confident. At the terminal, a man's status was judged by his room number. Marnier did not foresee any difficulty in dealing with an eleventh floor individual.

Right away his confidence was weakened. The man behind the desk was a caricature of everything Marnier had suspected administration men of being. He was thin, aesthetic, in appearance with sleek grey hair that made his tan look as artificial as it probably was. And he sat behind the desk with an air that suggested Supreme Control revolved around him.

He got to cases without preamble. "Did you pass Brendan Mitchell Kelly as being psychologically fit to be employed at the terminal?"

Marnier choked back a desire to say: "You know damned well I did." Instead, he used a cautious approach and said: "Offhand I can't remember the man but if he is employed here then he must have been passed by my department. What has he done?"

"Nothing as yet. But he has made application through several departments for permission to meet one of our Vegan guests with the openly avowed intention of killing him. Such action does not strike me as the behaviour one would expect of a man whom your department had passed as emotionally stable."

You cold pedantic stiff, Marnier thought privately. He wished he had his files handy to see just who this Kelly was and how he had rated in his tests.

Still treading warily, he said: "In my experience, no man at the terminal has broken down except when the circumstances were out with those for which his reactions were tested."

"Yes," said the man behind the desk. "You have had failures before, haven't you. As Secretary for Interplanetary Relations, I would say it is time you arranged your methods to include some of the unforeseeable circumstances which can arise. A situation like this could injure us politically and economically if it got out of hand. But as Secretary of Interplanetary Relations I intend to see that the situation develops no further. See Kelly at once and rectify your earlier omissions."

Marnier was seething. Eleventh floor or not, this individual was his superior. He had twice mentioned the fact. But Marnier was so sure of the efficiency of his department—within the limits which he had complained of—that he did not intend to surrender without protest.

"What did the Vegan do——?" he began. Sudden recollection chased the worry from his face and he did a quick rephrase of his question. "Was this Vegan the one who killed a woman and was the woman Kelly's wife?"

"That is so," the other admitted. "But a rational man, or one

who has been certified by you as rational, should not act like Kelly."

"Shouldn't he?" said Marnier. "How should he act? How would you act?"

The S.I.R. gave him a freezing look for making it personal. "We have a department here for dealing with every possible contingency. The Vegan will be taken care of by Law."

Just like that, Marnier thought. And Kelly—was he supposed to shrug and bow himself out of the affair because it had been passed to the appropriate department which would deal with it efficiently and impersonally? Could you ask any man to be so psychologically stable that he could quell the primitive emotions burning his heart out when his wife had been murdered?

Marnier did not feel particularly stable himself at that moment. He asked where he could find Kelly and left with a stiff curt promise to do what was necessary.

He knew Kelly's attitude was wrong yet he could not help showing his sympathy towards him. He gave him all the stock lectures, told him the days of barbarity were gone and that it was uncivilised to seek personal revenge. Kelly listened patiently and attentively to Marnier's expiation that the eye-for-an-eye price would be exacted in full after a proper trial. But when the psychiatrist had finished talking, Kelly bunched his fists and said very quietly: "Just give me five minutes alone with him, that's all I ask."

Marnier could see Kelly's point. At the same time, he knew that unless he could convert the man to accept the situation rationally his department would be in for an awful beating from Supreme Control. He put through a call to Law. It took some time before he found the subsection which had the murder case in hand.

"When do the permutation tests on this Vegan business begin?" he asked the cybernetist in charge. "They're finished! That was quick—what sentence has been passed?"

"The trial is over," he told Kelly unnecessarily. "Yes?" he asked the communiscreen. "Say that again . . . Are you sure? Hold on a second——"

He killed the sound and vision while he spoke to Kelly. "The Vegan was found innocent. He has been acquitted." There was no other way to say it, no way to dress it up and make it sound any sweeter. He saw Kelly's mouth disappear as his lips were pulled in and his jaw muscles stuck out like carbuncles. He flicked a switch and addressed the cybernetist again.

"Don't clear the data circuits yet. I'm coming over and I'm bringing Kelly with me. This he has got to see for himself. He is convinced it was an open-and-shut case of murder. He knows the Vegan admitted to the killing. And there are no words in my book that will console him—I doubt if I would stoop to using them if there were!"

"I ran six tests," the other said. "That's three more than I am obliged to do."

"Does that mean you too thought the verdict was fishy?"

"We don't have a case of murder very often. I was only making sure. The data banks are still loaded. You're welcome to use them. Run another six tests if you feel like it. I don't think you'll find a variant result."

Marnier said: "Thanks, I will. Can you fit an extension headset to the output? I want Kelly to go through this with me."

There are several hypothetical concepts which are mathematically absurd and impossible yet are capable of being put to routine practical use. The square root of minus one is such a concept; the fifth dimension of probability is another. It was on this latter concept which the computers of Law worked. The basic facts of a legal puzzle were fed to the computers. The machines then juggled the facts; they could arrange them in any time stream of the fourth dimension, in any of the probability permutations of the fifth dimension.

Any legal case has two possible verdicts, either of which can be right or wrong. The computers judged which verdict was right in the light of future consequences. In the case of the murder of Kelly's wife, they had judged that the consequences of declaring the Vegan innocent were preferable to those which would result from declaring him guilty and requiring punitive treatment.

Marnier explained all this to Kelly before handing him a headset. He added: "The rest is up to you. Whatever you think—that's what will be."

He nodded to the cybernetist who opened the memory banks with the deft flicking of a panel of switches.

"Go ahead," Marnier told Kelly. "Think whatever you want to."

Kelly stared naked hatred at the unwinking impassive eyes of the panel lights. His wish was simple. All he wanted was just five minutes alone with the alien

It was the first time Kelly had ever been in Law. In fact it

was the first time he had been in any of the administration buildings. He was an outdoor man; skilled, competent and assiduous in his work as an engineering ganger; straight, sober and law-abiding in his private life. There had been nothing which had ever called for his presence in the administration buildings—although there had been times when he had cast a wistful glance at the windows of Medicine where Beryl worked. He had no wish to be a white-coated worker himself, but he was proud to think he had married a woman whose intelligence qualified her to work in one of the great skyscrapers, even if she was only a laboratory assistant.

It may have been his first time in Law but he walked the corridors and used the elevators with a sure knowledge of where he was going. On the tenth sub-floor he marched grimly to the detention cells. Not once did he wonder why there was no one to stop him.

There was a solitary guard at the door of the Vegan's cell. He had a sympathetic face. Kelly thought a reasonable appeal would be better than violence.

"It was my wife," he told the guard. "The dirty stinking alien killed my wife."

"Too bad," the guard said. "They shouldn't be allowed to roam around like humans. Still, there will be one less when he gets vaporized."

Kelly glared at the door. "That won't bring back Beryl. And I won't see the execution. What satisfaction will that give me? You look a nice fella—why don't you slip the lock and turn your back for five minutes?"

"I know how you feel," the guard said. "But I've got my job to think about."

"He's going to die anyhow. And there are other jobs." Kelly slapped his overalls. "I've got two months pay if that will help. We . . . we were saving."

The mention of saving touched a responsive chord in the guard. He too was saving. Most of the lower grade workers at the terminal saved hard. They came for the money and immediately started saving to buy themselves out of contract. Working and living with aliens was all right in theory, but it was different in practice—a man cannot be responsible for his primitive dislike, distrust and fear when he has to rub shoulders daily with grotesque creatures from other worlds.

"Keep your money," the guard said gruffly. He waved his hand in front of the lock, looked over Kelly's head and walked discreetly up the corridor.

The sight of the alien instantly reminded Kelly of his childhood, of the fad there had been for plastic balloons in life-size shapes of men and dogs and cats and bulls and anything else the manufacturers could think of. There had been a game. You used two inflation capsules instead of one. The game was to see who could make the funniest balloon. With a man-shaped balloon you got a monstrosity with a great wobbling torso, stiff sausage arms and legs, a too-big head with too-big eyes and a too-big mouth like a delivery chute. The Vegan looked just like that—and complexioned all over like cigarette ash in a sloppy coffee saucer.

He was squatting on the floor in one corner of the cell, disdaining the comparative comforts of the bench, bed and chair. Kelly waded straight into him with three kicks in the obese belly and a dozen clubbing blows on the grin-split face. He stepped back breathless and disgusted. It was like slugging a lump of jelly.

Irrespective of their emotions, Vegans always seem to be smiling, an illusion conveyed by the huge mouth. Kelly's victim grinned with the coffee coloured blood trickling over his plural chins.

"Please?" he said. "The verdict has gone against me?" He seemed to be puzzled.

"I made the verdict," the ganger said.

"But I saved her! The computers have not been given all the facts. You have come too soon as an executioner."

"That's what I am," Kelly said. "But I'm not going to kill you quickly and painlessly. You're going to suffer as she suffered." And again he lashed at the alien until again he had to stop for breath. The pulpy head was beginning to look pulpier than normal. The mouth still seemed to grin. Kelly knew he would have to keep on hitting until he had wiped off the grin.

"Why did you do it?" he panted. "That's what I can't understand. She couldn't have done you any harm. I don't suppose she even knew you—she certainly never mentioned you to me."

"I met her in Medicine. I am a doctor."

"That makes it worse. Taking advantage of your skill and knowledge. Doctors are supposed to save lives, not creep up on unsuspecting women and stab them with lethal injections. I wish I was a medical man. Then I could take you apart lump by lump and still keep you alive to the last scream of agony."

He moved in on the alien again.

"Sit down," the Vegan said. Kelly surprised himself by obeying. He sat on the hard bench, the fire gone out of him, only patient curiosity left.

"It is now apparent," the alien doctor said, "that your entry here is illegal. Because it was done in ignorance I shall not report the matter. Your wife was being killed, Kelly, and I gave her the injection to slay the killer, not to slay your wife. Let me see how I can best explain—"

He sat silent for a moment, assessing Kelly's powers of assimilation. "You know what pain-killing drugs are?" he said, and Kelly nodded mutely.

"Good. These drugs function by raising the sensitivity threshold of nerve endings. In other words, only the most severe pains can be detected by the nerve endings. There are other drugs, such as the booster drugs which some Terrans take to help them work and think faster—these drugs lower the sensitivity threshold, which means that you feel small pains acutely. Have you noticed that?"

Kelly had taken boosters many a time. Yet it was only now when it was brought to his notice that he remembered how little accidental scrapes and scratches received while working had stung and tingled out of all proportion to their size.

The Vegan saw that Kelly understood. He went on: "Booster drugs are basically amines. The protein of food contains amino-acids. We on Vega are particularly unfortunate in being plagued by a germ which produces heavy doses of threshold-lowering amine drugs from the amino-acids of proteins. The result of infection by this germ is that the victim is extremely hypersensitive to pain. I have known patients scream that their heads were being split open when all they really felt was the blinking of their own eyelids. Unchecked, the disease results inevitably in death, usually self-inflicted."

He went across to Kelly and laid a puffed hand on his shoulder. "Fortunately there is a cure. And fortunately for your wife this disease is my speciality. I recognised the symptoms in her at once. She may have been normal when she left you in the morning, but by night she would have been a raving lunatic. She must have caught the germ from one of my race here. Again it was fortunate I had the cure on me."

Kelly struggled to get out of the acquiescent lethargy that pinned him to the bench. "But she's dead!" he mumbled.

"Asleep," the alien corrected. "I gave her an injection which killed the germ. It is the only known cure. The coma is a side effect. She will be awake in by your time scale , sixty years."

Kelly fought and beat the induced stasis. He stood up and lunged at the Vegan.

"Steady!" Marnier warned. "You'll rip out the headset connections."

Kelly sat down again. "Sixty years!" he said. "I'll be an old man."

Then he remembered. "Oh, God, the cremation was yesterday!"

Marnier tried to console him. "You can't blame the Vegan for not taking our ignorance into consideration."

"But doesn't the machine have all the facts? You must have known. Somebody must have known she wasn't dead. Why didn't they ask the Vegan?" Kelly paused and eyed Marnier with suspicion. "Or was that only a trumped up version of the truth?" he asked.

The psychiatrist worded his answer carefully. "The machine does have all the facts. It has been told the alien was a Vegan, that he was a doctor, that he came into contact with your wife, that he gave her an injection. Also in its memory banks are the facts about drugs and about the disease which is prevalent among Vegans. What you have just seen and experienced is one possible version of what would have happened if you had gone to Law with the intention of seeking personal revenge."

"It looked like a fairy tale to me," Kelly said.

Marnier thought it best not to mention that he too had recognised the Gelert theme—the faithful hound that was slain for defending a child against a wolf. He said to Kelly, "Try again. That was only one possibility. Perhaps another will convince you that the verdict was just. You know how to start off—think about the case."

Kelly turned at the sound of the door closing behind him. "What do you want?" he snarled.

"I thought I might be able to prevent you doing anything rash," Marnier answered.

"This is my affair."

"Mine too. Anything you do, I'll have to answer for. There have been too many cases of emotional breakdown. They'll have my head for the next one."

"You passed me," said Kelly, and Marnier thought it was an unfair remark. He wondered if Kelly was under the impression that because he had been passed fit by a certain range of tests he was free to do what he pleased, that anything he did must be right because he had been passed.

"Please?" said the alien in the corner of the cell. "You have come to release me?"

"Who passed *him*?" Kelly wanted to know, but like Pilate, did not wait for an answer. "You killed my wife," he accused the alien.

"Of course. It was necessary."

Kelly mouthed a curse. "Just like it's necessary for me to kill you! There are too many of your kind here, swaggering around as if you owned the place, as if you had as much right to be here as humans have. I wish they had never built the place. I wish they had left it the desert it was."

The Vegan squirmed on the floor and crossed his blubbery legs. He seemed to be quite comfortable. He fixed his gaze on Marnier, as if appealing to the more intelligent audience.

"We have the right," he said: "The terminal is the result of the combined intelligence of many races. We of Vega Nine made many contributions."

Marnier spoke up in an effort to take the play from Kelly. "He is distraught. You must forgive him. Perhaps if you explained why you——" He left it at that.

"Certainly. It is simple. She was a spy."

Kelly lunged forward, bent on murder. "Sit down," the alien said and Kelly obeyed.

A question sprang to Marnier's mind which the Vegan answered before it was voiced. "No one is non-political," he explained. "There are only degrees of indifference. The woman may have been cleared by your people as non-political and by your standards that may have been so then. But she was a spy when I killed her—which I did to prevent the bloodiest of wars."

"Beryl didn't know left from right," Kelly said with mild insistence.

"Everyone has political leanings," the alien repeated. "On any matter you must have an opinion. If it is the same as someone else's that puts you on his side; if it is different it splits you into two opposing parties. And since each of you will have others who agree or disagree with your opinions, small parties become large bodies—and that is politics. We know more about such things on Vega than you do."

Undoubtedly he did, Marnier thought. Vegans lived and breathed politics, an unavoidable and understandable situation when the structure of their solar system was considered.

The trouble with Vega was that the sun had too many inhabited planets. Earth was lucky in that respect; only the mother planet

was naturally inhabited and war and strife had been confined to that planet. Vega had sixteen peopled worlds, which made for incessant trouble. They could have sixteen international wars, one hundred and twenty possible interplanetary wars if any two worlds were involved, and if three or more planets decided to disagree with each other the permutable possibilities of war ran from five hundred and sixty upwards. Differences of opinion were inevitable. It was impossible to be non-political.

The Vegan doctor was from one of the least aggressive planets. But his was not the only Vegan world with which the terminal dealt. Other races—notably the Sirians and Rigellians—did a sizeable trade with some of the doctor's worst enemies; and since the terminal was one of the few neutral slabs of territory in the universe, those enemy ambassadors could not be barred from using it.

Terrans, by and large, tended to ignore the situation. They bent over backwards to avoid being implicated. If the Vegans wanted to squabble among themselves, let them do it far away on their own battlefields.

Marnier had this in mind when he said, "You must be mistaken. No Terran would get mixed up in Vegan politics, least of all a woman."

The alien doctor wobbled with some indeterminate emotion. "There was no mistake," he insisted. "I caught her in the act."

"What act?" asked Marnier.

"I had left certain of my baggage at the laboratories, not wishing to carry more than necessary. I assumed it would be safe there. I caught the Kelly female taking a vial of nerve-rot vaccine from one of my bags and giving it to the ambassador from Vega Six. He escaped before I could catch him. I had no option but to kill the woman. She was helping the enemy."

Marnier was glad Kelly was under stas. His free reaction would have been instant murder. Even Marnier had to control himself firmly. "An enemy in your eyes," he said with as much calm as he could muster. "But I think her action was probably made in all innocence. I think it was a typically humane action. The people of your sixth planet have the disease but not the cure. I think any Terran would have done what Kelly's wife did in the same circumstances."

"We are at war with Vega Six," the alien doctor said. He wobbled vigorously.

"Perhaps it would be a good peace move to offer your vaccine

to all your planets. To us, withholding it seems somewhat selfish and inhumane."

"War is war."

"And the war is yours not ours. I'm with Kelly—I think you killed his wife unnecessarily."

The Vegan's wide grinning mouth parted in what must have been a sigh. "How little you know of politics! The vaccine is the only means by which we are able to maintain supremacy. Nerve-rot continually decimates our neighbours, keeps their numbers down to manageable proportions. If they had the vaccine we should be overwhelmed in a year. And if you knew them as I do, you would also know that they are ambitious. They would overrun the universe in a decade. And Earth would not escape! They covet your world, my friend."

He was so patently sincere that Marnier was convinced. Nevertheless the psychiatrist was relieved that Kelly was kept immobile until the end of the interview.

"You should have let me kill him," Kelly said. "You heard what he said. Beryl was no spy. You know that. You said so yourself."

It was damned difficult, Marnier thought. He tried to explain once again. "That was only a possible occurrence. All the Vegan enemy got was one vial of vaccine. However, if the doctor had been declared guilty, the ambassador from Vega Six could have appealed for legislation to declare that since the doctor was wrong, he was right and therefore Vega Six should be given the formula for making the vaccine.

"Who cares about Vega Six?" Kelly was bitter.

"He told you what could happen."

"That was his story."

Marnier was just about ready to give up. It looked as if he had been wrong: Kelly should never have been passed. But the possibility of a man's wife being murdered—how could you test a man's reactions to a thing like that without actually resorting to murder yourself? A thing like that could only be done by testing a man to destruction—his old theme. He thought Personnel would never be perfect until they had androids. You could test them to destruction and use only copies of the ultimate prototype.

To Kelly, he said, "I think we might as well pack it up. You've seen enough to convince you the verdict of innocence was right, at least in view of the possible consequences."

Kelly shook his head. "I'm not convinced. He murdered my wife."

"But——"

"Let me try once more, just once more."

"It won't do any good."

"Let me try. And you keep out of it this time."

"I must observe."

"Observe all you want to, but don't interfere."

Marnier signalled to the cybernetists. "All right," he said. "Just once more."

Kelly was through asking why. There was sure to be some trumped up yet feasible explanation. The thing to do was act, not ask questions. He thought the guard was doing no more than he ought to when he let him into the cell.

The alien sensed Kelly's intentions. He tried to press his flabby bulk further into the corner. But Kelly dragged him into the middle of the floor and laid into him with boot and fist and tearing fingers. Two minutes later the Vegan was satisfactorily dead and Kelly passed the guard without even a nod.

And nothing happened.

The consequences were nil. There were no recriminations, and from the complete absence of any news of the alien's death, Kelly guessed the whole affair had been hushed up. He went back to work, and if he was a little quieter and moodier than before that was the only change apparent in him.

About three weeks after his visit to Law, one of his workmates fell spinning from a gantry, screaming until he hit the ground. He had started screaming before the fall but Kelly missed the significance of this until there were more falls and it was said that every victim screamed before falling.

Administration and labour had a minimum of liaison and it was some days before the gangers learned that people were screaming and dying in the buildings too.

For all its immense scope, the terminal was in some ways a closed community and its workers quite often knew more of the latest events on other planets than of the events on other continents in their own world. In this instance, it was from a Sirian on a stop-over visit from the Mojave terminal that they learned all Earth was afflicted by the disease which sent men screaming to death—and that the disease was Vegan nerve-rot.

Kelly got to know the disease intimately. He collapsed on his

way to Catering and writhed on the ground screaming. He came to in a cot in Medicine. He was strapped down by arms, legs and neck. Without the bonds he would have torn his own flesh from his bones.

The hypersensitivity was localised in the nerves of his skin. A billion biting ants could not have made a greater stinging. His skin was a wreath of fire from which he longed to escape but could not. He looked on the frequent injections with dread and longing. The narcotic gave him brief moments of relief but the price was so high he screamed every time the needle split his skin with a caustic sear of agony.

He dreaded any change of temperature, for these changes made the protective hairs on his skin rise and fall, and the writhing of the tiny erector muscles brought him more pain than an army of madmen with rubber truncheons could have done. The simple thing he dreaded most of all was the bending over his cot of the attendant physicians, for then the warmth of their breath made his skin boil into blisters which erupted and peeled back in petallate shards to lay bare the naked flesh beneath.

Through all the agony he was pitifully conscious. There was no narcotic which could release him completely. He heard the physician's prognosis with horror, yet dared not permit his face to express it: the slightest mobility entailed a maximum of excruciation.

"He's lucky," one of the doctors said. "Another day and his suffering will be over."

Kelly wanted to shout but could not. He wanted to know why they didn't do something about the disease. There were plenty of cases to study—why hadn't they come up with a cure? And the other doctor answered him, although he was really only repeating a regret which had been voiced many times in Medicine.

"If we only had that Vegan vaccine—" he said helplessly. "When did you say the next ship was due?"

"There are four here now. Two from Vega Six, one each from Ten and Twelve. There is nothing due from Vega Nine for at least another month."

"Another month!" The junior of the two physicians sounded surprised but he had heard it all before. "Just about long enough to wipe out half our population."

They went into a discussion which Kelly was forced to listen to in an agony of torment.

There was a specific reason why the nerve-rot vaccine was produced only on Vega Nine and was not available for general issue.

Of the many ways to produce vaccines, the most common is to inject a dead or mutated sample of the disease-causing bug into a large animal—such as a horse. When the horse has manufactured sufficient antitoxin, some of its blood is drawn off and the serum extracted from it.

But the Vegan nerve-rot bug was peculiar. It refused to cooperate in large animals. Its antitoxin could only be made in the blood of Vega Nine humanoids and the serum had to be freshly drawn—only rarely was it filled into vials, for it quickly lost its potency in any form of storage other than the humanoid body. In practice, every Vega Nine doctor was a walking storehouse of nerve-rot vaccine.

And Kelly had killed the only one on Earth.

Marnier signalled the cybernetist to switch off and save Kelly from further suffering.

"Well," he said. "I think that should have convinced you."

Kelly was shaking violently, he kept looking at his hands as if he could not believe the skin was still whole.

"It was hell," he muttered, and Marnier was relieved. It had been hell for him too. It had taken a lot to satisfy Kelly that the computer's verdict was fair, but at last the job was done and Marnier could go back to Supreme Control and tell the man on the eleventh floor that this was one time Personnel was in the clear: Kelly had finally made the grade.

He dismissed the ganger and remained with the cybernetist to make out his report.

He would have started indenting for foolproof androids if he could have followed Kelly.

Kelly had stopped shaking. Back in the reality of the cool corridors of Law it was easy to remember that his experience had only been a possible occurrence. And it was easy to condemn the machines and say the verdict was all wrong.

Only one good thing had come from the machines—now he knew his way around the vast Law building. He knew exactly where the detention cells were. He knew exactly where he could lay his hands on the Vegan murderer of his wife.

Kelly had his own verdict. He had already passed sentence.

All he wanted was five minutes alone with the alien. Just five minutes.

Forgivable Error

His mission had been all important, but considering its outcome, would they blame him for his mistake?

STRICTLY CONFIDENTIAL

*Department of Galactic Federation Inclusion Suitability Investigation.
Report No. KN954445935/264758*

FOR THE ATTENTION OF THE PRESIDENT

The following data is compiled from the observation reports of the Ellisby Squadron, following their return from routine patrol in Galaxy 9054327. It is clear from these reports that following the unnecessarily violent settlement of differences that existed between the Eastern and Western populations of the third planet of Sol, genuinely co-operative progress seems to have been made in their attempts to break through the confines of their atmosphere. Launching sites have been constructed in both hemispheres and the manufacture of prototype vessels appears to be well advanced. What technical details we have been able to obtain are to be found in the accompanying report, No. KN954445935/264758 (B). Due to our unfortunate inability to achieve any form of coherent mental contact with the natives, our own deductions as to the exact state of their progress has had to be obtained from visual impressions recorded at the time of survey, but these are sufficient to inform us that an elementary space-warp drive appears to be the intended method of propulsion. After due investigation of the material obtained, our technologists see no reason why they should not be successful in their aims.

It is obvious that the Universal Federation of Galaxies will soon be in the position of having to consider the application for entry of the aforementioned planet. Due to the increasing pressure being borne by the department, I have taken the liberty of enrolling in a purely temporary capacity, an advanced student from the Government Training College to undertake this case. His training record is above reproach and his Principal has expressed his considered opinion that a flub better suited to this particular set of circumstances would be extremely hard to find. His reactions to all tests involving the extensive and difficult Human-type emotional range have been remarkably accurate and should prove invaluable in this particular instance. Details of his qualifications are enclosed.

The Fllisby Squadron will be leaving for patrol in Galaxy 9054327 on the 94th of Pbbo, and I suggest that this extremely promising young flub accompanies them, to be deposited on the third planet of Sol at a suitable time. A preliminary survey has ascertained that the newly appointed World President will be present on the western continent at the city of New Chicago on the 6th of Quasby. Full details of his visit are to found on page 14 of this report. This would seem to be an ideal opportunity for the necessary investigation and one presenting the minimum amount of difficulties for our young friend to surmount. Should he prove successful, and I see no reason why this should not be the case, then perhaps the present ruling on similar matters could be eased sufficiently. . . .

"Good luck," sent the pilot, "and Zugg-speed."

He raised six tendrils in the formal Pffintog farewell.

Gfu did the same, trying desperately to conceal the excitement that induced a youthful desire to give off pink and blue flashes. Several times as the Fllisby 4 had neared his destination, it had required all the effort that he could summon to subdue the spasmodic displays of fireworks that had consistently threatened to break through his still youthfully fluffy outer casing. Ffubfully, he had held out until now, but the knowledge that this would be his last chance to let off steam before leaving the ship and thereby staying within the regulations was testing his control to the utmost.

"Ready," he sent.

The pilot dipped his tendrils and depressed the switch by the door of the breakdown chamber. The circular door swung into its opening, sealing with a soft hiss. Gfu was alone, seated tensely in the dimly lighted oval sphere, his tendrils twitching with nervous expectancy.

Vapourising waves hummed about him.
Breakdown began.

Thirty seconds later, he passed through the outer lock and into the black and alien atmosphere.

The ship had landed in a field, occupied at the time by a small herd of cows. Three of these had now left for distant parts, two were prostrate with shock, while the remainder cowered fearfully in the farthest corner of the field, their heads tucked well into the foliage of the hedge, their backs towards the machine, trying painfully to convince themselves that they had just witnessed a remarkably convincing trick of the moonlight.

Silently, the ship raised, hovered, dipped in salute, and was gone. Gfu, alone and very conscious of the fact, peered about him.

A group of four-legged creatures stood, silent and unmoving, a short distance away. They seemed undisturbed by his presence, an understandable fact, considering that all that remained of him in any material form was a wisp of grey mist. Presumably the landing of the ship had left them unmoved, also. Strange. He surveyed them, thoughtfully, attempting identification. They recalled none of the third planet occupants to which he had become accustomed in his lectures. He undulated, musingly, towards the cows, who remained where they were, their backs still turned, content to wait a while longer before indulging in any form of foolhardy investigation.

Their faces, Gfu decided, were a definite disappointment. No eyes, nose or mouth were visible, only a tentacle of some kind, finished at the end with a wisp of matted hair. Strange creatures, indeed. Possibly members of some rare agricultural breed. He considered attempting a practice infiltration, but dismissed the idea as a waste of time. The failure of Federation members to obtain any form of direct contact with Human-type beings was a matter that had been subjected, unsuccessfully, to rigorous experiments, and the likelihood of obtaining information of any value from one of their forms of livestock seemed remote.

He shrugged, pointed himself upwards, and elevated to a height of approximately fifty feet.

Some miles to the east, a cluster of bright lights winked at him through the darkness.

It marked, he knew, his destination. It was impossible at that moment to continue the conscientiously practised and maintained appearance of unconcern that he had adopted since the beginning of his journey. He sparked, tremulously. The rules to which he had

always so rigidly adhered were suddenly absurd, pettyfogging, a stifling list of nullifying inanities .

Briefly, and strictly against regulation procedure, a pink and blue fireworks display took place several miles west of the outskirts of the city.

A frantic thunder of hooves caused Gfu to pause in the middle of his celebrations and look down. Absurd creatures. Dimly, he discerned that the occupants of the field were all running backwards.

Maintaining his altitude, he wiggled towards the city.

His route had been meticulously planned. Soon he was moving among the glitter that was the city centre, peering keenly at the landmarks so carefully memorised.

Suddenly, ahead of him, his final destination loomed. White, and brightly lit, its hundred storeys swept high beyond the range of the street lighting, the topmost floors invisible in the velvet blackness that covered the city.

He hovered and studied it, adopting once more his formerly practised calm detachment. Really, the whole affair was proving too absurdly simple. So far, he had travelled over several miles of dangerously occupied alien territory without a single one of the several thousand natives that he had passed en route showing that they even remotely suspected his presence. He conceded, grudgingly, that the now almost perfected Breakdown technique was possibly the main reason for his success, but he felt that his own expertly unobtrusive mode of travel could modestly claim at least part of the praise that was undeniably due. He was sure, anyway, that his Principal would have approved. He recalled that proud moment when the Principal, tendrils twitching with nervous excitement and an occasional pink spark glowing on his fine old scales, had introduced him to the Minister for the Department of Federation Inclusion Suitability Investigation.

"A young ffub," sent the Principal, literally glowing with pride, "who carries my heartiest endorsement as a future celebrity in your department, Minister. A natural nubl, if ever I was acquainted with one."

High praise indeed, and something to set all future standards by. Nonchalantly, Gfu pointed himself skywards and elevated lightly up the face of the building, counting floors as he went.

The window, when he reached it, was locked. The building was high, and while a third of it towered above the sixty-fourth floor, the possibility of intruders had received obvious consideration.

Mentally bracing himself, Gfu thinned out and poured himself through the minute slot between the upper and lower frames.

The light was on in the room. Against the door directly opposite the window—presumably leading to a corridor—a chair was propped. On it, a man lolled, apparently asleep. Gfu assumed this from the excessive recumbancy of his position, the fact that the visual apertures were closed, and the continual rasping exhalation of breath from the lower facial aperture. No doubt a guard. Impressed by his dimensions if not his alertness, Gfu scanned the rest of the room.

A second door in the wall to his right obviously led to his destination. Against it, also seated, was another man. If not exactly poised for action, he was at least awake, idly perusing a form of tabloid. Amused, Gfu hovered above him, studying the exposed contents. There was little doubt that a race without the benefits of a personal sensory entertainments receptor wave were at a severe disadvantage. These two-dimensional depictions of various briefly clad female Human-types must surely be lacking the subtlety achieved by animation, or so he assumed. He studied the man's features interestedly, recalling clearly his Human-type Facial Contortions course.

Boredom, without a doubt. Gfu smirked. If all his analyses were so astutely made—and without even venturing into the emotion registration area—there was little doubt as to the ultimate success of his mission.

He thinned once more, and oozed happily through the keyhole into the inner room.

The figure on the bed was in his shirtsleeves, his head tucked well into the curve of one crooked arm.

Gfu hovered and studied him, frowning.

The customary entry was made through the lower facial aperture, but due to the President's position this was at present impossible. He could, of course, wait until the obstruction was removed, but that might take a little while. Following a short deliberation, he decided on the left audio chamber, the only clearly visible means of entry. True, it was generally only used in an emergency, and then by the cream of the Federation's agents, but his so far faultless performance fully justified the attempt in Gfu's own modest opinion.

Delicately, and displaying all the professional finesse that had made him the yurgl of his Infiltration tutor's eye, he lowered himself into the President's left ear.

Dull blackness surrounded him. Gently, he eased himself into

the position best suited to the study of the emotion registration area, the Pummfex Triple-Curve, perfected only after months of arduous practice.

He emitted the faintest glow of professional pride. Really, there was little doubt that so far the operation had proceeded with a smoothness that could only be accounted for by a natural flair for the work involved. He snuggled comfortably, welcoming the period of relaxation that would enable him to preserve the cool poise necessary for a balanced final judgement of his host. If he had had a little more room, his chests would have swelled as he once more recalled his old Principal's approval, and the expressions involved. A natural nubl

Contented, he dozed.

Reactions activated in his vicinity woke him sharply. He was alert instantly, his well-developed receptor glands responding with machine-like efficiency.

Irritation. Well, that was natural enough. No one liked to be disturbed from slumber, particularly following what he presumed had been a brief rest period. He activated his scanner and gazed through the transparent area of skull.

The two guards were present, the large one by the door, the smaller man by the bed.

"Already?" said the President, thickly. He yawned, stretched, and lowered his legs reluctantly to the floor.

His following communicatory sounds were liberally coloured by the irritation reaction again. Gfu absorbed it, doubtfully. It seemed very strong at that point.

"A half-hour," said the small man. He had sharp eyes with a chin to match, and a razor slit for a mouth. "Thought we'd better buzz you now. Time for a shower, if you make it quick. . ."

"Don't crowd, don't crowd," said the President, snappily. He stood, stretched again, and pressed a flat hand to his forehead. "Wow! This thing feels like it's stuffed with wire-wool. What do they put in the poison around here, anyway?" He made tasting sounds with his mouth. "Nothing that a hair of the dog won't fix. Mix me another, Skin."

The small man exposed his gums.

"Think you should? That was half a bottle you sank when we got here, an' we both know your limit. . ."

"Why don't you just," said the President. "shaddap?"

Irritation again, verging on rage. Reaction to insubordination,

obviously. There appeared to be a difference of opinion. Gfu probed, uneasily.

Liquid was poured from one transparent container to another, and enthusiastically imbibed by his host. Irritation ebbed, and was replaced by a slightly dimmed sense of well-being. The operation was repeated, with increased success.

Gfu studied the facial reactions of the room's other occupants. They seemed unfavourable. The small man animated his upper limbs, at the same time endeavouring earnest communication. The larger man appeared less moved, but the mastication of the lower rim of the lower facial aperture was surely an indication of mental concern.

Rage, coupled with a singularly unpleasant projection of contempt. Gfu felt faintly uncomfortable. Resentment at rest disturbance was understandable, a normal reaction in all life forms, but its excessive presence in this case, coupled with the generally unpleasant series of emotional projections was undoubtedly disturbing. No actual evidence of permanent instability, but the early indications were certainly present.

Thwarted in his attempts to cajole a fresh bottle from his cohorts, the President was pawing in a truculent fashion through the contents of the closet.

"Where, for Chrissakes," queried the President, petulantly, "is the lavender one?" Numerous jackets and a brace of togcoats fell to the floor and were ignored. "The lavender one. F'cryin' .!"

"Cleaners," ventured the small man. He exposed his gums again, wearily, considered the gravity of the situation and tactfully covered them. "Got fouled up at Zwardis', night before last. You had a little mishap after the lobster thermidor. Scotch an' lobster said the small man, dryly, "is poor mixers, so they tell me. ."

The sudden blast of vibrations that pounded Gfu were totally unexpected. Following the frustration period, his host had lapsed into a strong juvenile type resentment, maintaining a sluggish level of reaction. Now, undoubtedly, excessive homicidal aberration, projected in a singularly debased pattern. Thoroughly shaken, he continued his task as the storm buffeted about him.

Gradually, it died, to be replaced again by the former resentment reaction, coupled now with a definite personal-sympathy factor.

"F'cryin' ." said the President, sniffily. *"D'ya ever see such a creep outfit?" Soggily, he eyed his reflection in the mirror. "N' will ya lay offa that, f'cryin' . . ?"*

The small man suspended his energetic plying of a clothes-brush, stepping out of range of an irritably flailing arm. With pursed lips, he attempted to induce the wearing of a powder-blue topcoat with cerise satin lapels.

"In jus' one minute. Ho! the 'phone," said the President. He propped a finger alongside his nose, almost losing an eye in the process. "In the meanwhile, how about one for m' baby . . . ?" He winked, roguishly, producing a silver flask procured on his rummage through the closet, "'n' one more f' the ro . . ."

The immediate confiscation of the flask served to unleash another barrage against the uncomfortably situated Gfu. The homicidal aberration again, this time coupled with the personal-sympathy factor. Really, could such a barbaric set of reactions be the property of a sane mind? Could it be that the Human brand of sanity was in itself an alien thing, a warped, twisted reversal of logical behaviour as it was understood by other life-forms?

Alarmingly strong waves surrounded him. He was almost smothered by the overpowering presence of the female-parent image.

"Mom," snuffled the President, brokenly. He made half-hearted attempts to free himself from the hands that pinned him in a chair. He glared bleakly at his tormentors. "'F my Mom was here, she'da made minced-chicken outa you big bums f' pushin' me 'roun'. Minced," said the President, with suddenly glassy eyes and wobbling head, "shicken."

He looked woozily puzzled.

"Almost there," said the small man, with resignation. "If we rush him through, we might just make it. Take 'em off. I'll get the cawfee."

The following period Gfu found maddeningly difficult to clarify. The waves were sluggish, at times almost non-existent, ranging through a variety of emotions that almost all embraced a most extraordinary pre-natal type lethargy. His brain began to spin as he fumbly attempted to assemble a logical pattern out of the waveringly projected disorder.

Giddily, he admitted defeat. His superiors, he was confident, would have made as little progress presented with a similar set of circumstances. One thing, however, was abundantly and regrettably clear. An appalling lack of logical behaviour had been so far displayed, and no signs were in evidence that any would be forthcoming. He considered the problem thoughtfully as the waves blundered fitfully about him. *Could* the standards of Human behaviour on this planet be diametrically opposed to those of other

intelligent species? Emotional necessity? Some form of religious belief? It was extremely doubtful. He recalled no even vaguely comparable examples during his specialised research into the species, one of the most thorough periods of his training. His old lecturer would, he felt sure, have found the present situation an entirely fresh aspect on the ruling-classes of the Human race.

Some form of cohesion gradually filtered through. He thankfully ceased ruminating, and concentrated.

"A'right, a'right," said the President, sulkily. Freshly showered and dressed, he sat on the edge of the bed and morosely sipped coffee that was black and barely below boiling-point. His colour was faintly eau-de-nil and the cup made a considerable clatter against his teeth. "So I was a bit tanked. So now I'm feelin' great. So what for the hollow-eyed gapin'?"

"You'll never believe this," said the small man. He sounded slightly malicious. "But there was one point when you were screamin' for your old lady." He shook his head, and clucked. "Your old lady, so help you. That's how close to the ceilin' you was floatin'."

Horried revulsion, allied irretrievably with the female-parent image. Gfu's brain throbbed, dully. What, in the name of Veeb, was he supposed to make of that? One moment it was affection of a revoltingly infantile nature, and now this.

"That bad?" said the President. He was distinctly drawn. He licked his lips, furtively. "Skin, how about a short one before we leg it outa here? Sort of a bracer. ."

"No hairs," said the small man.

An obscene thought thrummed about Gfu. Appalled, he blushed. While its exact meaning eluded him, the implication was universally clear.

"You're the joker," said the President, "who keeps the intake straight. Little things like that." His tone was decidedly unpleasant. "Handle my public life the way you want to, but my private ."

The small man said, "Right now your life is private, but only for the next ten minutes or so. Then it gets public." He suddenly had a hard, shrewd eye. "Very public, you might say. If you got out in front of 7,000 people carryin' a load like you just sweated out, you'd be nothin' but a bag of stale beans in less time than it takes to spit." He demonstrated the length of time necessary for this operation. "You're shaky, but you can stand. If you ain't too happy about the way I wet-nurse you, the best you can do is to get yourself another boy. Just lately it's been strainin' my good nature keepin'

you sober enough to let the fool public see you. You ain't the only ."

"Can it," said the President. He flapped a weary hand. "Stow it. You're breakin' my heart. There's others, but right now I'm the big one." He looked sourly at the small man, rubbed a hand over his face, and rose. "O.K., you twisted my arm enough. Let's get with it. The sooner we put up the shutters t'night, the happier I'm goin' to be."

Resignation, coupled with a strong desire for slumber. For the first time Gfu found himself at one with his host. Wearily, he relaxed as the party vacated the suite and moved downstairs. They avoided the lobby, making their way through a series of corridors that ended at the rear of the building. A car was waiting, attended by a fourth party.

As they rolled smoothly along the city streets with the emotion registration area decidedly muted, Gfu reviewed the position. He confessed to a strong sense of disappointment that his initial assignment was proving so unfavourable. Possible lack of experience in interpreting some subtle explanatory factor could be the answer, but he was strongly inclined to doubt it. So far, every indication pointed to his host being a self-indulgent, conceited, obscene-minded, arrogant boor, but absolute certainty on these points had to be resolved. They were heading, he knew from his briefing, to attend the opening ceremony of the new People's Senate building, an occasion selected by his superiors as being ideal for investigation purposes. The Presidential reactions to direct contact with the people should provide an excellent opportunity to assess his true stature as a leader. Gfu's own opinions in that direction were already formed, but his orders were specific.

The journey was brief and, until just prior to its termination, uneventful.

"This looks like a bad one," said the small man. His naturally lipless mouth was pulled into an almost invisible line. He craned his neck, peering, as the car nudged its way a little further into the mass of howling people, its twin horns blasting. "Where they keepin' those cops hidden, for the love of Pete?"

"If you think," said the President, sourly, "I'm exposin' myself t' those screamin' lame-brains without proper protection, you got another big think comin'. For all the noise you make ."

The small man withered him with a look.

"Save it. You're goin' t' need all the air you got makin' your-

self heard tonight. *This is the roughest since L.A.*" He peered again. "Where, f' Pete's . . . ?"

Dark uniforms loomed suddenly on either side of the car. A red-faced policeman rapped on the window, gesturing irritably.

"This is it," said the small man, grittily. He snapped back the door-handle, and pushed. "Let's go."

Bedlam surrounded them. Through the transparent area, Gfu observed his host's reactions to the reception accorded him by the sea of adoring faces. More promising, definitely. An upper limb waved, presumably in genial greeting. Distress, propagated by acute personal discomfort was apparent in the surrounding area which was currently a rag-bag of fragmentary reactions, but he found this perfectly understandable. His own cramped position was not one that he would have cared to occupy for any longer than was absolutely necessary.

The group inched its way through the swaying, sweating crush of people and up to the steps that led to the shelter of the building. Conditions inside were little better. The crowd was as thick, the air thicker. The large man, accompanied by a quartet of policemen, cleaved a path down a passageway that was a stifling mass of glistening humanity. The small man brought up the rear, snapping non-stop admonitions to the crowd that seemed ready to topple and swamp them at any time.

A door was reached and unlocked. There was a final brief tussle, and a final-sounding thud as the door slammed woodenly into its frame. Babel still sounded, now slightly muted, in the corridor.

The small man was busily inspecting the President, running bird-like eyes expertly from his head to his feet.

"How was it?"

The President eyed him, glintingly.

"I nearly got pulped, an' you ask how was it. I'd like t' hand those monkeys some of their own med'cine. A steamroller," said the President, "oughta do a nice job on . . ." His eyes, wandering furiously over his rumpled coat, stopped. A small split showed at the corner of a buttonhole. "Why, those lousy . . . !!"

His choice of expletives occupied a full ten seconds.

"Talkin' of medicine," said the small man, "a small dose wouldn't do you no harm right now." He looked sour. He jerked his head at the big man, who gruntingly unearthed a flask from his hip pocket. "One is all. I'm not havin' you fall flat on your puss in front of the biggest crowd you had this year. It was close in

Philly, an' we can't hand out the 'overworked' gag too often. Here."

He took the flask from the big man, poured a minimum shot into a tumbler and held it out. Its disappearance was rapid.

"Skin. . ."

"One," said the small man, "is all." He flicked a glance at his wrist watch. "We're late." He crooked an impatient finger at a man in a white coat who had been lurking unobtrusively in the background. "Just a little colour, Barney. Right now he looks like a sea-sick skeleton. Make it fast." He hustled the large man to the door. "Clear the corridor. Tell 'em he's due right out. If they want t' catch it all, they better head for their places."

The howl of the mob cut jarringly into the relative quietness of the room as the door opened and closed. The President, a towel across his front, winced sulkily.

"F' cryin'. . ."

The small man said, "Stow it. You'll make Barney smudge you." He eyed the operation critically for thirty seconds, swooped, and whipped the towel away. "Enough. You look human, kind of."

He glanced up as the door opened. The big man stuck his head inside and nodded.

"Clear."

"Right there," said the small man. He gripped the President by his shoulders, and jerked him upright. He eyed him, coldly. "How'd you feel?"

"Fair," said the President. He licked his lips. "Dry, but fair." The make-up glowed pinkly on his face and he seemed steady on his feet. He brushed past the small man, and opened the door. "But one never can tell, can one?" He leered back at the small man from the open doorway. "Better get ready t' make my excuses, Skin boy. This could be Philly all over again."

As they moved down the corridor, Gfu wearily back-checked for the twentieth time, indulging in what was by now an idiotically pointless formality. The final vicious outburst in the dressing-room had irrevocably closed the case. He was, and had been for the past hour, witness to a range of emotional reactions that for sheer animal limitation it would have been hard to equal anywhere in the entire Federation of Galaxies. His host was self-indulgence personified, an animate refuse-bin for all that was pathetically weak and blindly stupid, a walking testimony to the immaturity of a people whose utter lack of discrimination in their selection of a leader irrevocably damned them as totally unfit for inclusion among the Master races.

A dreadfully disappointing initiation to his career, but one that had to be borne with fortitude.

Dampened but firm, he activated the timing mechanism of his minute disintegration unit and prepared to depart as the President stepped out into the glare of the spotlights.

The sudden bedlam that broke loose as the slight figure moved to the centre of the stage continued for nearly two minutes. In that time, paper was flung indiscriminately ceilingwards, a forest of bare arms strained hungrily towards the pool of light, and six young women were briskly removed from the auditorium following their sudden collapse.

The President raised his arms, imperiously. The howling faded, shrank to a murmur, and finally dimmed to a straining silence.

He addressed them stridently, fervently, hands clenched despairingly to his lilac-coloured bosom.

Pandemonium shrieked deafeningly across the auditorium, an explosion of sound that almost panicked the gloomily departing Gfu. He completed his exit from his host hastily, elevated himself to ceiling height, and hovered. Stunned, he watched the crowd.

A slaverling, gesticulating mob was on its feet, swaying in unison below, pounding their feet, their neighbours, themselves, in their complete abandon. Figures lurched from their seats, seized others, and grotesquely flailed in the aisles. A nodding carpet of white, sweating faces moved ceaselessly, ducking, bobbing, mouthing sounds that must have been incoherencies even to themselves.

With a jolt, Gfu snapped out of the numbing trance that had gripped him. If final proof had been needed, justification for the Federation's action called for, here it was below him! An incensed rabble, lacking utterly in any form of civilised restraint, indulging unrestrainedly in a frenzied display of hysteria that recalled some of the lower forms of Snuggby devil-rites.

It was with a distinct sense of relief that he left the building and emerged into the cool night air.

Thirty seconds later, the President exploded.

It was past midnight when the small man and the large man were returned to the hotel under heavy police escort. Both were silent, both pale.

"It's doubtful," said the captain in charge, "that we'll need you gentlemen during the night, but if anything breaks we'll give you a call. I guess he was the one they were really interested in, so I don't

think you need any sleep over your own safety. Matter of fact, this place is pretty well covered tonight, anyway. . .” He paused, and cleared his throat. “Just to play it safe, I’ll have a couple of boys in the lobby. Well.” He rubbed his chin. “Guess I’ll bid you both good night.”

He saluted with a forefinger, and departed. Two men in top-coats and snap-brims remained, consulted briefly with the goggle-eyed desk clerk, and seated themselves comfortably in the two best chairs available.

“Key,” said the small man. He stared, hollow-eyed past the desk clerk as he spoke. “404.”

The desk clerk bustled frantically to oblige.

“Fantastic business, gentlemen. We got it over the nine o’clock newscast.” His features expressed sympathy. “Twelve o’clock, they said no arrests had been made, but an early apprehension was anticipated.

“Hah,” said the small man.

“Beats me how anybody could get away with a thing like that, right under everybody’s noses.” The clerk shook his head, frowning. “Must have planted it somehow, I guess. Why’d they want to do it, anyway? A real swell guy like . . .”

“A bum,” said the small man, bleakly.

“Pardon . . .?”

“A bum,” said the small man. “And you can quote me on that.” He took the key, and pocketed it. “Sang flatter than an ironin’ board, but he was a good meal ticket while he lasted. Johnny Beazley, the Baron of Blubber.” He pursed his lips, leaned across the counter, and prodded the clerk. “Walkin’, screamin’ evidence that advertising can sell you anything. You liked him?”

“Got all his records,” said the desk clerk. He looked a little dazed. “All of ‘em. ‘Cryin’ just for you,’ ‘A mother’s love,’ ‘God bless my little pussy cat’.” He gestured feebly. “Yeah, all of ‘em.”

“Treasure ‘em,” said the small man, “as a lovin’ memento.” He clicked his teeth, dryly. “C’m on, Beef. Sack time.”

The desk clerk, still numbed, jerked back to reality.

“Gentlemen, I’m sorry. That’s the wrong key you have there. Clean forgot to tell you, what with the news and all. We’ve had to move your things. Fact of the matter is, we have a V.I.P. here in the building tonight. Strictly incognito. A *very*,” said the desk clerk, “V.I.P. indeed, if you follow.”

The small man looked blank.

The desk clerk became briskly confidential.

"He was right in the room below yours. Nobody saw him arrive, but they had government security men keeping the corridors clear this afternoon for ten minutes or so. Now, what with bombs being heaved around and so on, they've made us shuffle things around just a little for extra precaution. ."

"He?" said the small man. "You mean the President?"

"He was due to open the new Senate building this evening. Missed the telecast myself, but he's right here in town." The desk clerk smiled. "And he's got to stay somewhere."

"You don't say?" The small man turned down the corners of his mouth. He looked vaguely impressed. He grinned crookedly at the big man. "So Johnny was warming the bed for the People's Choice. He'd 'a' liked that. A crummy snob," said the small man, "as ever I met."

"Yeah," said the big man, sadly.

They departed morosely for the elevator.

Gfu had returned to his starting point. His job was done. He modestly anticipated the approval of his superiors for his steadfast and unswerving devotion to duty that had necessitated the destruction of a presumably embryo civilised being. A painful business, but necessary if the Federation's members were to be protected from their otherwise inevitable contamination by these savagely undisciplined people. Now, the powers of the Federation and the seriousness of its intentions had been demonstrated. Formal printed notices, warning of trespass, would be delivered by the next patrol. If the planet chose to ignore them, then the necessary police action would be taken.

Snuggled comfortably in the branches of a tree, one eye cocked for the imminent arrival of the Flisby 4 which had already responded to his summons, he confessed to a slight feeling of chagrin.

A full moon poised brightly over the field, clearly illuminating the scene of his arrival. Below him, the cows grazed, or slept peacefully. Admittedly, it had been considerably darker when he had left the ship, leaving him with a perfectly valid excuse for such an error, but to have been baffled in identifying the common cow, an agricultural mammalian species that he remembered perfectly well from his studies of Lower Life groups was, to put it plainly, aggravating.

It was fortunate, he considered, that he was so rarely prone to such imbecile errors.





The Touch of Reality

*In his youth he had dreamt of the Moon and all its wonders—
but not of this nightmare journey stalked by death at every turn*

Illustrated by Martin Frew

Few dreams can stand the touch of reality. When he was young Mark Sturent had often stared through a quarter of a million miles of air and vacuum at the shining face of the moon. It had attracted him as it had all boys of imagination and he had built up a mental

fantasy of brave adventure and heroic endeavour, picturing a tight little community of men facing, and surmounting, an almost hopeless challenge with himself, naturally, as one of the leaders. Now, twenty years later, reality had soured the dream.

Seen at close quarters the moon was not a pleasant place. It was too harsh, too sterile, too cold at night and too hot during the day. The craters were death traps of mist-fine dust; the mountains jagged and rotten like the crumbling teeth of a skull. It was too quiet, too lonely, too much like the ravaged face of a long dead woman who yearned for company in her dissolution. Even the earthlight did little to soften the barren bleakness and the stars, bright and unwavering, hung like frozen snowdrops in the sky.

But if the brave adventure and heroic endeavour had vanished the challenge remained. It was a very simple challenge and a very personal one. It was the ability to stay alive. Mark, sprawled in his suit, sometimes wondered just how long he would be able to meet and defeat it. So far he had been lucky.

"Coffee," whispered a voice from the helmet radio. "Man! Could I use a cup of java!"

That would be Sam Levine, young, brash, supremely self-confident, cynical as only a man who has never evaluated life can be cynical. He knew the price of everything, the worth of nothing and adhered to the credo of self first, last and all the time. He was devoid of imagination and could stare at the beauty of Earth, compare it to the surface of the moon and his only thought would be for a hotdog, a cup of coffee and a cigarette thrown in for good measure.

"Button it up," said Mark into his microphone. "No talking."

"Hell, Cap, why not?" Sam sounded aggrieved. "Just staying out here doing nothing, saying nothing, is giving me the willies."

"You heard what I said." Mark squinted at the luminous face of the chronometer set among an array of instruments just above his viewport. "Melkin?"

"Here, Captain." Carl sounded disapproving. Mark guessed that had he been in charge of the patrol he would have blasted Sam for breaking radio silence—and probably done more harm by his tirade than that caused by the original fault.

"How are you feeling?" Mark smiled to himself at what Carl must be thinking. He, the Captain, breaking his own firm injunction against any but routine radio contact.

"I'm fine, Captain." The note of disapproval was now more in evidence.

"Not too cold?"

"No, sir."

"Levine?"

"I'm freezing." Sam made his teeth chatter to accentuate his complaint. "How much longer we got to stay out here, Cap?"

"Not much longer." Mark glanced again at the chronometer. "Relax, Sam, that coffee will taste all the better for having had to wait for it."

"Maybe." Sam didn't sound convinced. He would have said more but Mark forestalled him.

"No more talking. Keep your eyes peeled and your mouth shut."

It was the old injunction repeated, Mark didn't know how often, but as important now as it had ever been. Watch, don't talk! For talking, via radio, could be picked up and a directional fix taken. And betrayal of their position could mean a bullet-punctured suit or worse. For, in this strangest of all wars, neither side was playing.

It was a war which was officially unrecognised, a struggle which was not apparent on Earth or more than suspected by other than the interested parties. It was a war with peculiar rules and a specific code which had nothing to do with chivalry but everything to do with survival. To bomb the main bases would have been simple but would have led to immediate retaliation and global conflict. To destroy the ships prior to landing would not have been too difficult but would have been tantamount to suicide. It was a war with an unwritten agreement that neither side would destroy expendable material. But men were not expendable.

Which was why Captain Mark Sturent rested on the Luna dust in the Luna night, eyes staring towards the enemy sector and a mark IV machine rifle at his side.

Waiting is hard at the best of times and waiting in the narrow confines of a space unit is the hardest of all. Bodily functions have to be suspended or, if not, the discomfort increases. The limbs are hampered by the tight fitting plastic, the head enclosed in the great, globular helmet, and life balances on the ability of the bodily heat, plus electrical battery power to combat heat loss by radiation so that survival is possible at -240°F .

Lying in his suit Mark wondered, not for the first time, just what had ever made him think of the moon as a place of romance. Coupled with the fear that his power would fail and leave him to freeze in the cold of the Luna night was the uneasy knowledge that his life depended on the smooth functioning of his air unit. If it failed then he would die. If it continued to function then he would

draw breath as long as he could live. The closed cycle algæ system had been the greatest weapon in the battle against the environment. But even with air and heat the psychological factor posed a problem.

"Cap." It was Sam again. "I think I've spotted something."

"Where?" Mark was instantly alert.

"Over by the triple peak. About one-fifteen. See it?"

"Melkin?" Mark wasted no time. From his own position he had a bad view of the named position but Carl would have it in his field of vision.

"Nothing." Melkin was very positive. "Sam just wants to hear the sound of his own voice."

"I don't want to hear the sound of yours," said Mark sharply. "Keep watching, you too Sam, and report only if you've anything definite."

Cautiously he wriggled to a point of better vantage, rolling his body so that his viewport pointed in the right direction. He blinked, stared and was not too surprised to find that he saw no signs of anything suspicious. But he didn't allow himself to relax.

It might be a false alarm, probably was, or, even, it was as Carl had suggested and Sam wanted to hear the sound of human voices. Locked in a suit, away from even the sight of a companion, it wasn't too hard for a man to slip into the illusion that he was wholly alone. It was natural for such a man to want to hear that others were alive and around him. Natural enough for him to even have a hallucination to justify his breaking radio silence.

Or maybe he had actually seen something and was telling the simple truth.

Mark had never actually met the enemy. He had seen signs of their presence, examined their footsteps in the dust and made abortive attempts to track them to their base, but that was all. As far as he knew the enemy had never seen him either, the fact of his existence was proof of that, but there was always a first time for everything and, for all Mark knew, this could be his first time. He wanted to make certain that it wouldn't be his last.

Movement, in the pressure suit, was not easy. Even with the one-sixth Luna gravity strengthening his muscles the journey was no pleasant stroll. Care had to be taken not to slip into a dust-filled pocket or fall from the sudden yielding of rotten stone. It took a long time for Mark to rise from his place of concealment, work his way along in the shadows until he had reached the suspected area, and assure himself that nothing lurked where Sam had said.

"Cap." Sam's voice echoed from the radio. "I can see it again."

"How many?"

"One."

"What's he doing?" Mark raised his arms as far as they would go, which was a little above his shoulders. "Well?"

"Surrendering, I think." Sam sounded doubtful. His doubt was registered in the little metallic sounds coming from the radio, the transmitted sounds of something being lifted into position and tapping against the air unit and helmet. "Should I let him have it?"

"You're looking at me, you dope," said Mark quickly. "See? I'm lowering my arms."

"Can you spot any footprints, Captain?" Carl was practical.

"No." Mark stared at the landscape, brilliantly lit in the earth-light, sombrely dark in the shadow. "Not a sign."

"I knew it." Carl sounded disgusted. "Sam got scared and wanted someone to hold his hand." It was, thought Mark, a good diagnosis. Sam was quickly defensive.

"I'll hold your hand, you squarehead," he snapped. "You trying to get me into trouble, or something? I tell you I saw something out there."

"Sure." Carl was sarcastic. "A Moonman, maybe?"

"Skip it." Mark felt that the argument was getting out of hand. "Maybe you did see something, Sam, and maybe you only thought that you did, but one thing is for sure. When we get back to camp you're going to spend a few hours rubbing up on recognition. You should have spotted who I was by my suit."

"At that distance?"

"You are close enough to see the movements of my arms," reminded Mark. He glanced at his instruments, the investigation had taken longer than he thought. "Better get over to Carl's position. I'll rendezvous with you there. It's time we headed back."

The best part of any patrol was, to Mark, the return to camp. It wasn't much, the camp, but it was a place where it was possible to relax. Gouged out of the side of a mountain, a combination of natural fissure and artificial cave, sealed, insulated, studded with U.V. lamps and with pine-scented air it was the acme of comfort to a man just back from patrol.

Comfort is relative. To those fortunate enough to be in Main Base the intermediate bases were places of hardship devoid of swimming pools, live theatres, shopping centres and the transported luxury of modern life. To the residents of the intermediate bases



the advance camps were little more than glorified jails. To the men who were attached to them they were home.

The others were together when Mark reached the rendezvous point. They touched helmets and spoke by conduction, switching off the suit radios.

"Do we return by the same route, Cap?" Sam was eager to get back to his animal comforts, he had a heap of glossy girly magazines and a deadline to make before he passed them on.

"That wouldn't be wise," said Carl before Mark could answer "For all we know they could be waiting for us."

"I wasn't asking you," said Sam. He was still annoyed at Carl "How about it, Cap? A quick trip for a change?"

"A safe trip," said Mark. He glanced at the chronometer "We've got plenty of time. We'll take it slow and easy and arrive all in one piece. I'll lead, Sam will take second and Carl will cover the rear. Keep well away from the dust and stay in shadow. No talking unless you have to." He stepped away, breaking the contact before the others could argue.

Return to camp was simple and yet, in some ways, more dangerous than any other event during patrol. They were heading towards safety and that, in itself, tended to lead to carelessness. And there

was more need on the return journey for watchful caution than at any other time.

The camps and intermediate bases were disguised and camouflaged for a very good reason. They were expendable targets. It was always possible that an enemy patrol had spotted them, were waiting their chance and, rather than make a quick but minor victory, gambled on hitting the jackpot, the total destruction of the advance camp. So it was vital that any returning patrol made quite certain that it wasn't being followed. Elementary caution dictated taking a different route inward than outward, but breaking new ground on the moon is always hazardous.

Mark led the way, testing spots of shadow, keeping to naked rock, taking a swinging path which would, eventually, end at the camp. Behind him, waiting until he was well ahead, came Sam. Carl waited, watching to make sure nothing was wrong, then he too advanced. It was slow going, careful going but essential.

As always, and despite his trained caution, Mark's thoughts flew ahead to their homecoming. They would group and advance to give the recognition signals. A man would come out to meet them and, if satisfied, would escort them to the disguised air-lock. Once inside the camp helpers would divest them of their suits. Mark would make his report to Colonel Westerlain and then head for the spray showers. Then food, hot coffee, a taped show, books or a quiet, friendly game of chess with Latimer or Blanchard. Then rest followed by a spell of camp duty, outside guard duty, escort duty and patrol duty again.

He stumbled as rock yielded beneath his foot and caught his balance with a painful twisting of his body. The near-fall jerked him back to full awareness of his immediate surroundings and he halted, resting as he searched the landscape with his eyes. Nothing. Nothing but the inevitable dust, the jagged mountains, the broken and shattered foothills. He twisted, watched as first Sam and then Carl headed towards him and, when they had assembled, gestured for contact.

"Anything wrong?" Carl's breath sounded laboured.

"No. Just a routine check. Air units O.K.?"

"Mine is." Sam grinned through his viewport, Mark could just see his pale features grimacing behind the plastic.

"Good. Carl?"

"No trouble, Captain."

"Sure? You seem to be having trouble with your breathing."

"I almost fell, back there. Then I had to hurry to catch up."

Carl sounded grieved, as if Mark should have known better than to doubt his word.

"All right. Sam, you take the lead. Carl, you take second and I'll cover." Mark gestured towards a low ridge of rock some little distance ahead. "We haven't far to go now. Once over that ridge and we'll be in sighting distance of camp. Don't break your neck running."

"Coffee," said Sam. "I can taste it now." Then he was off, machine rifle at his side, his bloated torso and slender limbs giving him the appearance of some ungainly insect as he headed towards the ridge. Mark waited until he was well away, then clapped Carl on the shoulder. Alone, he turned and stared back the way they had come.

Nothing, of course, he hadn't expected anything. Sometimes he wondered, at times like this, what he would do if he did happen to spot a shape in an unfamiliar suit. Would he lurk in ambush ready and eager to kill? Would he try to take a prisoner? Would he be subtle and wait and follow so as to wipe out a thriving flock of life on the barren moon, stamp out a tiny community of planetary brothers? It was easy for others to talk, to tell him what he should do, where his duty lay, but, secretly, Mark hoped that he would never have to make the decision. He turned a second before his radio screamed into life.

"Cap." It was Sam, his voice thin with hysteria. "Cap, for God's sake!"

"No talking!" Mark lunged forward, safety almost forgotten in the emergency. "Save it until I reach you."

"But . . ."

"Shut your mouth!" Mark felt a helpless anger at the other man. He could order but that was all, obedience was something else. "Talk again and I'll shoot you on sight. I mean it!"

The threat worked. Mark raced forward, catching up with Carl just before they both reached the top of the ridge where Sam was standing. Mark reached him, knocked him over the lip of the ridge and flung himself to the ground, his helmet clanging against that of the other man.

"Fool! What's the idea of standing like a target at a shooting gallery? Mark's ears rang as Carl thrust his helmet into contact.

"Captain!"

"I'm talking to Sam." At that moment Mark hated them both. "To pull a stupid trick like that so near to the camp. . ."

"Never mind that," yelled Carl. "Captain, have you seen it?"

"Seen what?"

"What I was trying to tell you." Sam swore with helpless anger. "You didn't give me no chance to tell you, no chance at all. Look!"

He lifted his arm and pointed towards a rolling cloud of dust.

Sometimes, when tragedy comes, it is so overwhelming that it brings its own anæsthetic. Mark stared at the new-made crater, raw and angry in the earthlight, tilted his head to stare at the last traces of the dust cloud and felt as if he were living in a dream, that none of this was real.

"It must have been recent," said Carl. His voice was strained as it echoed from the radio. "The dust hadn't even settled."

"It wouldn't." Mark kicked at a shattered scrap of debris, watching the dust plume and hover. There was no air to support it but there wasn't much gravity to pull it down again either. "From the looks of things there was an explosion and a big one at that. Anything with the force necessary to smash the camp would have thrown the dust really high. It could have happened just after we'd left."

"Gone!" Sam sounded as if he still couldn't believe it. "Just a hole in the ground."

"The enemy." Carl sounded convinced. "They must have done it." Despite his conviction he didn't bother to keep radio silence and Mark couldn't blame him. They all needed the comfort of conversation now as never before.

"They could still be out there, watching us, just waiting to let us have it." Sam's voice rose towards hysteria. "Cap, we just can't stand here, we've got to do something!"

"Take it easy." Mark took a deep breath, feeling the numbness of shock dissipate beneath the need for action. He switched off his radio, gestured and they touched helmets. "No need to take chances," he said. "We can't be sure that the enemy were responsible for this, it could have been due to an accident or natural causes."

"It wasn't an accident," insisted Carl doggedly. "If it wasn't the enemy then where are the guards?"

It was a good question. Three guards were posted at all times to watch the approaches to the camp. They should have spotted the returning patrol and challenged them.

"We'll search for the guards," said Mark. "Combat approach. Move slowly and carefully and take no chances."

"You think that we'll find them?" Sam was pathetically eager.

"No," said Carl. "We won't find the guards." Mark wished that he didn't sound so certain.

They didn't find the guards. They didn't find their bodies or any trace of the three men but that wasn't too surprising. If a man fell, or were thrown, into a dust-filled crater then he would vanish for eternity. Quicksand had nothing on the dust, it was as fine as mist, loosely packed, and a man thrown into it would disappear as a stone in water.

"That settles it," said Carl when they had re-established contact after their barren search. "They're dead and buried or taken prisoner."

"Not necessarily." Mark felt it important that he should not take anything for granted. "They could have escaped injury when the camp blew up and decided to make it to Marigold."

"Without waiting for us?" Carl was sceptical. "Sorry, Captain, but I can't agree with your theory."

"You aren't here to agree with my theories," snapped Mark. "You're here to obey orders." His sudden irritation surprised him, the shock must have been greater than he had realised. "As I see it there are at least two explanations for what has happened here. The camp could have been wrecked by accident or natural causes. In that case the guards could have decided to make it to Marigold. Or the camp could have been destroyed by the enemy. In that case the guards could have been surprised, killed and buried or disposed of in some other way."

"That I can follow," said Sam. "A rocket launcher could have taken care of the camp. But why should the guards have left without waiting for us?"

"It's just possible that they were in camp when it happened," said Mark. "Or they may have assumed that the enemy were responsible, that we had been ambushed and that there was no point in their staying."

"I prefer my own explanation," said Carl stiffly. "It is neither sense nor logic to look for unreasonable causes when it is obvious what has happened."

"Have it your own way," said Mark indifferently. "But remember this, we saw no signs of enemy action during our search for the guards; we have seen no signs of the enemy at all during the patrol and. . ."

"Hold it, Cap," interrupted Sam. "I saw something, remember?"

"You thought you saw something," corrected Mark. "I saw no signs when I investigated."

"But you could have missed the sign," insisted Sam. "Or maybe they didn't make any. We don't, why should they?"

"It's the guards which worry me," said Carl. "I simply can't understand why, if they aren't dead or prisoner, they didn't wait for us. With all due respect, Captain, their absence doesn't make sense if the camp was destroyed other than by enemy action."

"I disagree," said Mark, and despite himself glanced at his chronometer. "It makes very good sense. You have both forgotten that it is almost sunrise."

The moon is too cold at night - 240 F., but cold can be combated with electrical heating. The moon is too hot during the day, 220 F., and so far no method had been found to refrigerate a pressure suit. Once every fourteen Earth-days the Terminator swept around the moon, turning night into day and day back into night again. At night the patrols ventured out into the coldness but at day life went underground, resting in the camps and bases and, aside from the essential guards hiding in the shadows, no one ventured out.

It was simple, common sense survival logic that the three guards, if alive, would have headed for the safety of the intermediate base camp as fast as they could.

If they were alive. Mark doubted it and, as they wended their way from the ruined place that they had thought of as home, his mind toyed with the alternative possibilities. The accident, if it had been an accident, could have happened during guard-change. Regulations stated that the guards should remain on duty until relieved but discipline had softened with the lack of any concrete evidence of the enemy and it was possible that one group waited for the other to return before starting out.

Or maybe the explosion had thrown them into craters. Or perhaps it had been a double explosion, the first minor and the second occurring when the guards had returned to give what aid they could. Perhaps, had they stayed, they would have found the torn and mangled remnants of their bodies but Mark hadn't permitted any waste of time. The camp was dead and everyone in it. Colonel Westerlain, Latimer, Blanchard, all the twenty-seven others of the garrison, all gone as if they had never been. They were dead and this was no time for mourning.

The path Mark has chosen wound around the edges of a vast crater before climbing to the summit of the ringing mountains. The

going wasn't easy, the rock, rotten with constant temperature changes, threatened to crumble underfoot, and trained caution still dictated that they should leave no footprints or signs of their passage. The distance was ten miles, on Earth a few hours' marching, on the moon, despite the low gravity, it took as many hours and the first climb had left them exhausted.

"I can't take much more of this." Sam, his voice distorted by the conducting helmets, was obviously suffering. Too many cigarettes, too little exercise while in camp, too great attention to self-comfort had softened him. Carl seemed to be in no better shape.

"Can we rest, Captain?" His breathing was laboured. Mark tried to see his features through the viewport but could only catch a glimpse of a vague blur.

"We'll rest for a while." Deliberately Mark didn't give a set time. Relaxation was important to rest and no one could really relax while watching a clock. He settled himself against the rock, the others close to him, their helmets touching his and each other's in a strange intimacy.

"How long, Cap? Before we make Marigold?" Sam coughed, the sound echoing from the globular helmet.

"Quite a while yet." Mark didn't want to think about it.

"How long?" Sam was insistent.

"We'll know when we get there." As ever, Carl was practical. "Worrying about it won't make the journey any easier."

"I wasn't talking to you," said Sam. "I was talking to the boss man. How long will it be, Cap?"

"I don't know," confessed Mark. "It depends on how we progress, what detours we have to make. Marigold is about a hundred miles from the camp on the same line of latitude towards the dark side. More than that I can't tell you."

"Why not?" Sam was bitter. "It's our neck as well as yours, isn't it? Why shouldn't we know the way as well as you?"

It was logical, put like that, as logical as the security measures which had restricted the knowledge of the location of the intermediate base to officers only. Even that knowledge was sketchy, Colonel Westerlain had once pointed to a spot on a map, drawn a rough circle with his finger and announced that, in case of emergency, Marigold would be found in that area. Mark, together with the other officers, memorised what seemed to be the easiest route.

"It's in case we get taken prisoner," said Carl, defending Mark before he had a chance to defend himself. "What we don't know we can't talk about."

"And what if something happens to him?" Sam was, as usual, concerned wholly with his own welfare. "What then? Do we just wander around like a couple of lost sheep?"

"Cut it out," said Mark. "I'm still with you."

"Now you are, but what if . . ."

"Cut it out!" Deliberately Mark moved from the community of helmets, not wanting to argue and not wanting to create more unpleasantness than already existed. A good officer knows the value of letting his men blow off steam and vent their grievances on their own. His motives, naturally, were misunderstood.

"Toffee-nosed swine." Sam glared through his viewport to where the captain sat alone. "Trust officers to look after themselves."

"Nothing wrong with the captain." Carl instinctively defended the class to which he aspired. "The trouble with you, Sam, is that you don't understand military organisation. An officer is always sent outside with the men; he has to take care of them and they have to take care of him. What sort of army would we have if everyone gave the orders?"

"What happens to us if anything happens to him?" Sam returned to the main question. "Do you know the way to Marigold? You know that you don't and neither do I." It was impossible to get any closer to Carl but Sam's voice suggested that he had managed the impossible. "Say, how about making him tell us? Draw a map or something?"

"You can't make officers do anything they don't want to do. If you try it then that is mutiny. You get shot for mutiny." Carl's tone left no doubt that he would refuse to discuss the matter further. Sam grunted, twisted his head and found the mouthpiece of his water container. He took a long drink of brackish water and suddenly thought of something else.

"Say, how long can we live in these suits?"

Mark was thinking the same thing.

A pressure suit was designed to protect life in the vacuum, while allowing the maximum amount of mobility and little else. The protection was provided by insulation and a sealed air unit; mobility by limb-hugging plastic and certain other devices, such as the heating units, were provided to enable the wearer to perform his duties rather than with any object of comfort. Aside from the radio and instruments the suits held three containers. One contained a quart of brackish water and was coupled to a mouthtube. The others

were tongue-operated dispensers, one containing glucose tablets, the other a combination of tranquillisers and pain relievers in capsule form.

Theoretically, a man could live in a pressure suit until he died from thirst but the actual tolerance limit was much less than that. The suits were uncomfortable, the psychological factor was on a mounting curve and the normal maximum time for a man to wear a suit on outside duty was fifteen hours. Mark and his patrol had already been in their suits for twenty-five.

He thought about it, sitting with his back against a rock, staring down the side of the mountain they had climbed with so much effort. They had arrived within sight of the camp twelve hours after the start of their patrol. Three hours had been consumed in reaching the site, the slow and cautious search for the guards, while another ten had been swallowed by their journey. Marigold was, at the least, ninety miles away, say ninety hours to play it safe. That would make at least four, maybe five days in the suits. How long can a man last on a quart of water?

Conditioned reflex made Mark lick his lips. As yet thirst was no problem but he had forgotten how often he had sipped at his container and had no way of knowing how much water remained. The drugs would help, he supposed, at least they were supplied to relieve suit-fatigue and ease minor but irritating physical pain.

Thinking about it started an itch between his shoulder blades and, as if in sympathy, a chafed spot on his leg reminded him of its presence. Irritably he nudged the heat-control with his chin, turning it down a notch, then, as the itch increased, turned it down even lower. A helmet clanged against his own and Carl's voice came thinly to his ears.

"Shall we make a start, Captain?"

"In a moment." Mark felt a strange reluctance to leave. It was good just to rest, to let the ache fade from his limbs, to sit and stare at the swollen, misty ball of the Earth as it floated in the star-shot sky. He wondered how many people were, at this moment, staring up at the Man in the Moon and how many of them, if any, could ever guess that he was the man they were looking at.

"Captain!" Carl's voice held urgency. "Captain, are you all right?"

"Of course." Mark felt irritation and realised, with a start, that he had been on the verge of falling asleep. "Have you checked each other's suits?"

"Our equipment is in order, Captain." Again the subtle im-

patience as if Carl were telling him that he should have known better than to ask.

"Check them again, mine too." Mark rose to his feet, momentarily losing contact, then regaining it with a ring of metal. "Watch for chafes, half-rips, rubbed spots, you know the drill. We had a rough passage up the side of this mountain and we don't want any accidents."

"No, sir." Carl registered his acceptance of authority. "If you will please turn around, sir."

Mark grimaced but shuffled around while Carl checked his suit, then did the same in return. He found a rubbed place and applied a self-seal patch, making no comment but knowing that Carl would recognise the lesson. Trust no one, not even yourself. He contacted for a final word before tackling the descent.

"We can't afford to waste any time," he said. "But we don't have to act like fools. We want to arrive, remember that, and the one sure way of not doing it is to take too many chances. We'll stay close to each other on the downward journey and use the rifles as life-lines. Questions?"

"How about radio silence?" The question, from Carl, was surprising. He qualified it, hastily. "Among these peaks there is little chance of our broadcasts being picked up, the rock will act as a barrier."

"It can act as a reflector too," reminded Mark. "We keep radio silence as far as possible. Sam?"

"Why don't you tell us how to get where we're going?" He sounded aggrieved. "If. . ." He broke off, abruptly, his helmet lifting from contact and Mark caught a glimpse of his face, vague behind the viewport but recognisably tense. He turned to follow Sam's line of vision and then, suddenly, knew what had caused him to linger at the top of the mountain.

He saw the dawning of a new Lunar day.

It was a beautiful sight and one which, in other circumstances, he would have enjoyed. In the far distance, across the bowl of the plain, the tips of jagged peaks glowed fire and gold with the eye-searing brilliance of the naked Sun. Even as he watched the line of light came closer, sliding down the nearside slopes of the mountains, reaching forward as if eager to catch up with the three men.

"God!" It was Sam, radio silence forgotten. "We'll never make it!"

"Steady!" Mark could feel his stomach tightening at the sight

but knew that panic was useless. "We'll be in the shadow going down and, with luck, may even make it over the next range. Wait!" He shouted the word as the others left him. "Sam! Carl! Take it easy!" He was wasting his time and he knew it. The sight of the dawn had brought fear, and panic was in command as the two men raced away from the advancing line of light. Then, despite himself, panic caught Mark too and he joined the others in their headlong dash down the crumbling slopes.

It was a nightmare journey down treacherous slopes and precipitous walls of stone. They ignored the elements of personal safety, poising to spring out and down, drifting in the low gravity to land, their metal soled boots scrabbling, to poise and spring again. Once Mark felt himself slipping sideways, toppling slowly down towards a place where upthrust spurs of stone waited to impale him like blunt knives or smash his helmet with clubs of granite. Desperately he fought to regain his balance, succeeding at the cost of a wrenched ankle, ignoring the sudden stab of pain as he continued his headlong flight. Twice Sam fell, both times leaping to his feet, the luck which always seems to attend fools strong with him. On the lower slopes Carl, who had moved with inborn grace, misjudged and landed heavily on his side, rolling, the clatter of his helmet echoing from the radio. Mark reached him, knelt by his side and anxiously examined the precious air unit. It was dented but appeared unharmed.

"How are you, Carl?"

"Shaken, but that's about all." Carl struggled to his feet. "Where's Sam?"

"Well ahead of us." Mark glanced towards the running figure. Sam had reached the plain and was racing along the edge of the dust-filled crater. "He'll be all right. Do you want to rest for a while?"

"No, sir." Already Carl was moving. "We can't afford to waste time." Abruptly he broke into a run and the mad, useless race against time was on again.

And it was a useless race, Mark knew that even as he ran in the path Sam had made. Before them reared a second ridge of towering peaks and beyond that would be a third, a fourth and then a long, low, exposed section of rock, over which they had to pass. Long before they reached that rock the Lunar day would have caught up with them. Fast as they were moving it was impossible for them to move faster than the advancing line of heat and light. But Mark hoped that, at least, they would make it over the next ridge.

It wasn't too hard a climb, on Earth an Alpine Club would

have made easy work of it, but hampered by the suits, sweating and exhausted from their insane dash down the far ridge and across the plain, it taxed their strength to the uttermost. Sam went first, living proof of how panic can lend a man unaccustomed strength. Carl followed a close second, while Mark toiled at the rear. All of them, at one point or another, had lost or discarded their weapons.

Despite himself Mark kept twisting his body so as to look backwards. He wasted time by performing the manoeuvre but he couldn't help it. He felt like a man running from an enemy or as if he were living a nightmare in which he ran and ran and yet didn't seem to move. But this was no nightmare and the enemy was very real.

The enemy was the dawn and the more than 400 degrees difference of temperature which would come with it. Once in the light of the naked Sun his suit would be heated from well below zero to above the boiling point of water. The plastic could stand the temperature range and the material was a poor conductor, but even so life would rapidly become unbearable.

A man is, at all times, generating heat. Normally that heat is dispersed by conduction, convection and radiation. You can't lose heat other than by radiation while in a vacuum and, though heat could be lost by direct contact with the surface of the moon, that became impossible as soon as the immediate temperature rose higher than that of the suit. Inevitably the outside heat would penetrate the suit, adding to the bodily generated temperature of the wearer. And no man can live for long at a temperature higher than that of boiling water.

The sunrise moved fast, too fast. Mark stared at its rapid advance, each time the sight spurting him to greater effort. The gleaming light slid down the far slope, stole relentlessly over the plain and drew an advancing line of brightness beneath his feet. It caught up with him when he was almost at the summit of the ridge.

It was as if a light of intense brilliance had suddenly blazed on his back, pinning him to the rock as if he were a fly caught in the beam of a powerful searchlight. Reflections from the stone dazzled his eyes so that he moved, lids half-closed, fumbling for hand- and foot-holds, feeling his way to the top and the cold, dark safety of the shadows on the other side.

"Captain!" Carl ignored the radio silence. "Are you all right?"

It was a stupid question, Mark felt as if he were being boiled. Gasping, he turned his head until his mouth found the water tube.

Greedily he sucked and then, remembering, spat out the mouth-piece. "Sam?"

"There." Carl pointed down the ridge. "He didn't stop."

"Crazy idiot!" Mark felt a quick anxiety. "Sam! Sam, do you hear me? Slow down, you fool, you'll kill yourself!"

If Sam heard he made no answer, but the sound of his breathing, harsh and laboured, almost sobbing as it came over the radio, was answer enough. He was a man crazed with fear and the fear was contagious.

"Let's go." Carl sprang down to a lower section of the ridge. "Let's get moving before the sunlight catches us."

"It's caught us already." Mark had to restrain himself from repeating his wild passage down the first ridge. Luck had been with him then, it might not be with him a second time. He caught up with Carl and grabbed his arm. "Take it easy."

"We can't waste time!" Carl's breath, like Sam's, like Mark's own, sobbed in his throat. "We've got to keep moving."

"We need to rest." Mark knew that he couldn't continue the too-rapid pace much longer. Fatigue was blinding him to danger and, sooner or later, he would take a false step and plunge to his death. He dug his fingers hard into the plastic covering Carl's arm. "That's an order! Understand?"

For a moment Carl's panic struggled with his innate desire to obey, then, just as panic was winning, Sam missed his footing.

He gave a half-grunt, half-curse then, as he toppled over a sheer drop, their helmets rang to his screams. He took a long time falling, drifting down with the casual, deceptively gentle motion of a low gravity world, but when he hit his inertia was high and his screams died with the impact.

Mark was thankful for that; when a man has to die it is best that he die quickly.

The cave was a small hollow scooped in the side of the mountain. Inside it was dark with perpetual shadow, not even the earth-light ever penetrating more than a little way past the opening. From the mouth of the cave it was possible to look down over the foothills, over the vast, dust-filled crater and on to where the ring-mountains reached for the sky. Mark sat and stared at the distant ridge, his mouth still furry from sleep, his head aching and his body throbbing from his recent exertions. Behind him, sprawled on the floor, Carl rested in uneasy slumber.

Mark could tell it was uneasy from the sounds echoing from



his radio. The breathing was ragged, broken, more like the breathing of a man who has run hard and fought harder than that of a man in the last stages of sleep. But sleep, any sleep, was escape from the torment of the suits.

Outside the mountains and plain scintillated with sun-glare, the sunrise had caught and passed them long ago. Somewhere on the upper slopes Sam rested in final dissolution; they had not troubled to find and hide his body. The journey downward had been a horror of light and shadow, the contrast between the illuminated sections and the midnight shadow making each stage of the journey a progress into potential oblivion. They had found the cave and almost immediately fallen into exhausted slumber. Now, awake, Mark had time for thought and worry, thought for planning and decision. A catch in the breathing and a low mumble warned him that Carl was finally awake.

"Captain! Where are you, Captain?"

"Here." Mark withdrew into the cave and knelt beside his companion. "Relax, Carl, everything is under control."

"Yes, sir." The sounds of restless moving and a liquid gurgling.

"Better take it easy on the water, Carl. We're going to need every drop."

"Yes, sir." Carl's voice was mechanical. "Just a little to rinse out my mouth." He stirred, rested his hands beside him and heaved himself upright. "God! My head!"

"Take a couple of drug tablets." Mark had already taken half of his. "Some glucose, too; we burned a lot of energy coming over the mountains."

"Yes, sir." Again the mechanical acceptance of higher authority. Mark stared through the viewport but in the darkness could see nothing.

"Are you all right, Carl?"

"My head's killing me." The sound of sucking as he helped himself to a sweet. "Sorry, sir, to be this way. I'll get over it."

"Of course you will." Mark forced a cheerfulness he did not feel into his voice. "Air supply all right?"

"I think so, sir. Nothing I can do about it if it isn't, is there?"

"No," said Mark evenly, "there isn't. But don't worry about it."

Carl wasn't worrying, Mark knew that. Exhaustion coupled with shock had driven him into a temporary retreat. He was a natural-born soldier and automatically he had thrown all the necessity for making decisions on to his officer. Mark, to him, was now father and God. What he ordered Carl would do, mechanically, unthinkingly, more like a robot than a man. It was a state of mind Mark hoped he would soon recover from.

"I've been thinking of a plan of action," he said. "Actually we've no great problem. Our big enemy is the sun-glare but the suits can stand brief exposures without overheating and we stand a good chance. We'll make the journey in short stages, finding cover in shadows when we get too hot." He waited for comment. "Carl?"

"Yes, Captain?"

"Any suggestions? Questions? Anything to add?"

"How about the viewports?" Carl stirred and his voice took on fresh interest. "The glare is pretty bad, sir, can we dim them in some way?"

"None that I can see. These suits were designed for earth-light conditions and sun-filters weren't included." Privately, Mark cursed those responsible for the specifications of the suits. Weight and cost, of course, the two important essentials, with cost taking high priority.

"How long do you think it will take, Captain?"

"Not too long." Mark drew lines in the thin film of dust before the mouth of the cave. "Here was the camp." He traced a

path. "This is the first range and this the second." His finger jabbed a small clearing. "We're about here. Now Marigold lies over here, say about eighty miles, maybe less. We've to cross two more ranges, small ones and then a long ridge of rock. Nothing to it, normally, and we've passed the hardest part." His flattened hand obliterated the crude map. "Just keep heading directly away from the Sun and you'll come to it."

Carl grunted, suit-terminology for a nod.

"Now follow me closely." Mark hunched himself to the edge of light entering the cave. "We'll make for that ledge, there should be a shadow-patch under it. Then we'll cross over to that crevasse and after that backtrack to that broken ground. One long stage will take us to the plain and there should be some shadow under those boulders. Another long stage over to the foothills and then up the ridge from cave to cave. We'll have to find them as we go, I can't spot any from here. Half-way up we'll swing right through that shallow pass." Mark dropped his arm. "Just stay close to me and we'll be all right."

"I hope so." Carl made a choking sound. "Sorry, Captain, but it's my head. Shall we go now?"

"Yes." Mark rose and then, like a swimmer taking the plunge, stepped out into the brilliant sun-glare. It was like stepping into a furnace.

It wasn't the heat, that would come later when his body began to perspire and the air grow hot to his lungs, it was the glare. The fury of the naked sun reflected back from scabrous rock and volcanic dust, shimmering as it struck his viewport and seeming to penetrate his eyes until it rested on the surface of his brain. And there was no escaping the glare.

Mark tried. He accelerated his pace, memorising little stretches of the path and following them with his eyes closed. He tried bending at the waist but then lost the blackness of the sky. He tried turning his head but met tiny suns shining from the coverings of his instruments. The only real escape was speed; the only real surcease the brief respite of the shadows.

It was cat and mouse with the ever-watchful Sun as the cat and Mark and Carl as the frenzied, scampering mice. Darkness spelt safety; light spelt discomfort and eventual death. So they raced from the cave to the ledge and rested until their breath eased in their lungs and their hearts slowed their pounding. They raced from the ledge to the crevasse and found no shadow so ran over to the broken ground where they crawled into midnight black like nocturnal insects

seeking shelter. Then the long torture to the boulders on the plain, the longer torture to the foothills and the scramble up the ridge until they found the sanctuary of a cave.

And when they found it Mark discovered that Carl was dying.

It was the air-unit, and he had been afraid of what might happen all along. The units were tested to twenty-four hours and they had been in the suits for three times longer than that. And Carl had damaged his unit when he had fallen on the journey down the first ridge. Subconsciously Mark had been expecting trouble, consciously he had tried to forget it, but now it had to be faced.

"It's my head, Captain," Carl said. His tone was diffident as if he were apologising for something he should have been able to avoid. "I'm hot and I can't seem to breathe and my head is killing me."

"Take some drugs." It was poor advice but all Mark could offer.

"I've taken the drugs, Captain, all of them, the water too but it doesn't seem to help." Carl lifted his gloved hands and pressed them over his viewport. "If I could only cut down the glare, maybe that would help."

Mark didn't answer, he sat, feeling his stomach tighten, waiting for what he knew had to come.

"Could it be the air-unit, Captain?" At last Carl had managed to face it. "I had a pretty bad fall and maybe it got thrown out of kilter. I remember what they told us back at school, about the air-units I mean, could that be the trouble, Captain?"

"Steady." Mark had caught the warning note of hysteria. "No need for panic, Carl. I'll take a look."

It was a gesture and both of them knew it. It was impossible for the wearer of a suit to reach his own air-unit. He couldn't even open his helmet nor could he shed the suit unaided. A man in a suit was a helpless prisoner in a personal cell, totally dependent on others to restore him back to a natural life. Mark could see Carl's unit, could touch it and superficially examine it, but that was all. He had neither the tools nor skill to effect repairs and, even if he had, they would have been useless in a vacuum. If Carl's unit was faulty then Carl was going to die.

"I can't see anything wrong." Mark gently ran his hands over the connections from upper shoulders to helmet. "It's possible that the fall upset the CO₂ regulator. Excessive carbon dioxide would account for the shortness of breath and the headache. At the rate

we've been operating you need plenty of oxygen and you may not have been getting it." He ran his fingers over the slight dent he had discovered in the tough metal. "Maybe the humidity control is out of action too, but that isn't important." He tried to sound cheerful. "Never mind, Carl, we'll be at Marigold before things get too serious."

"I don't think that I can make it to Marigold, Captain." Carl paused, gasping for breath. "I don't think that I can go much further, not the way things are."

"Nonsense!" Mark was brusque. "That's no way for a soldier to talk, Carl. I thought that you were tough."

"I thought so too, but I've never been this long in a suit before." Carl twisted his body so that he stared at the brilliance outside the cave. "I'm sorry, Captain, but I can't take much more of it. I feel closed in, buried alive, just as if I were a man in a coffin." He gave a bitter chuckle. "I am too, am I not?"

"Only if you want to be." Mark tried to see the other's face but the reflected light obscured the viewport. "A man can keep going just as long as he wants to, Carl. It's only when he gives in that he's beaten. So we've been a long time in the suits and by the time we reach Marigold we'll have probably set a record, but that's no reason to think we can't do it. We can do it and we will do it—if we want to."

"If we are able to, Captain," corrected Carl. "A man can't walk if he can't breathe."

"You're assuming things, Carl. We don't know that your unit is faulty. You feel weak and out of breath but that could be due to other causes. Suit-fatigue, an upset stomach, a developing chill, almost anything. Don't let your mind trick you into giving up when there is no real cause for it." Mark forced confidence into his voice. "We'll make it, Carl, both of us and you know what? When we reach Marigold I'm recommending you for a commission. Isn't that worth trying for?"

"I'd like a commission," said Carl. "Thank you, sir, I appreciate your good intentions."

"I'm selfish," said Mark. "I want to be on the winning side of this war and one way to do it is to select good men for command positions."

"Yes, sir." Carl was silent for a long time, so long that Mark thought he had fallen asleep. "You know, Captain, I've been thinking. All the time I've been on the moon I've never killed an enemy. That's what a soldier is for, isn't it, Captain, to kill the enemy. But

I've never done that. That sort of makes me a bad soldier, doesn't it?"

"You and me both," said Mark. It was a subject he didn't want to talk about. "Better get some rest now, Carl, we've a hard time ahead of us."

"But the enemy has killed us, Captain." Carl seemed determined to pursue his train of thought. "They destroyed the camp and wiped out the guards. They really killed Sam; if they hadn't blown up the camp he wouldn't have died. And they are going to get us too, in the end."

"How?" Mark yawned, he was having difficulty in staying awake, despite the discomfort of the suit. "Because we might not make it to Marigold, you mean?"

"Maybe we won't be allowed to make it much further." Carl's voice lost itself in introspection. "We've grown careless, Captain, what with forgetting to set a rear guard and not watching and not being too careful about the tracks we're leaving behind us. If they were out there we'd be easy to follow."

"If they were out in the sunlight they'd be roasting in their suits," said Mark. "They'd have more to worry about than us." He yawned again. "Get some sleep, Carl."

"I'm not tired, sir. Have you considered the possibility."

"That's enough!" Mark was tired and had no intention of pandering to Carl's morbid line of thought. "There's no one out there and, if there were, then you're doing the worst thing possible by not maintaining radio silence. Now quit worrying about nothing and get some rest. That's an order!"

"Yes, sir." Carl didn't alter his position. "Captain?"

"What is it now?" Mark was impatient.

"You'll get to Marigold, sir. You don't have to worry."

Mark didn't reply. Deliberately he switched off his radio and, sprawling on the floor of the cave, closed his eyes and tried for sleep. Despite his physical exhaustion sleep did not come easily. His nerves were too strained to immediately relax and he felt a touch of guilt at having been so curt. Carl was a dying man. He should be gentle with him, understanding, perhaps he could even find some way to fool destiny and get them both safely to Marigold. When he awoke he would think about it.

But when he awoke Mark was alone.

There is no place lonelier than the face of a dead world. Space is lonely but space has never known life and it is so vast, so imper-

sonal, that loneliness becomes transmuted into awe. But a dead world is like a graveyard; full of ghosts and memories of what it might have been and, to a solitary man, the endless stretches of barrenness begin to take on a dreadful menace.

Mark began to feel that menace as if the moon were a vindictive thing; a mass of deadness intent on destroying the single speck of life which crawled and ran, scampered and stumbled over its serrated face. In the heavens, mocking the frozen beauty of the stars, the Sun glowed with the imaginary fires of Hell and the Earth, pale in comparison, seemed almost like the figment of a dream.

"Stop it!" Mark shook his head in the confines of the helmet, hardly aware that he was speaking to himself. "You've only one aim in life, boy, and that's to get to Marigold and do it fast." Automatically his mouth found the watertube. Sucking was a waste of time, the container was empty, but sucking produced a little saliva which eased his burning throat. He felt resentment that he couldn't lick the perspiration from his body, his suit was clammy with sweat and his thirst was so great that liquid, in any form, would have been welcome.

"Got to get moving." He forced himself from the patch of shadow and stumbled, no longer able to run, towards another tiny oasis of darkness. Despite himself he began to think of Carl.

He should have known what the other had intended, the clues had been obvious, even to the position Carl had adopted in the cave, almost as if he were a self-appointed guard. And his talk of the enemy, it all added up. Wrong, of course, but to a man suffering from suit-fatigue anything could be made logical and nothing was impossible.

Carl had convinced himself that the enemy had been responsible for the destruction of the camp. That they had done it with a cunning purpose and that they had followed the surviving patrol. The reason? Because they wanted to be guided to Marigold, there to repeat their symphony of destruction. It would be a victory, if they could blast the intermediate camp. Not a decisive victory, of course, but a victory all the same. And so Carl, poor deluded fool, had walked out of the cave and taken up the rear guard, determined to prove himself a soldier by killing a non-existent enemy, sacrificing himself so that Mark could make his way to safety with a clear conscience.

"Nuts," said Mark to himself. "The guy was as batty as a bat. Crazy!" He stumbled, tried to save himself and fell, rolling awkwardly and screaming with pain as the Sun lanced through his

viewport, seeming to sear through his lids to char his eyes. On his feet once again he blinked to try to clear away the retinal image and, because of the flaring spots of red and green filling his eyes, tripped and fell again. This time he took longer to regain his feet.

"Getting weak," he mumbled. "If anyone's following me they'd have an easy time." He gave a chuckle. "Following me! Who the hell'd want to be out in this weather?" Then, suddenly, it wasn't a joke any more.

It was a little thing which jerked him back to sanity, nothing but a footprint in the dust. It was one of a dozen leading from one bare stretch of rock to another, long, broad oblongs, the marks made by booted feet. And, staring at them, Mark felt Carl's suspicions rear in his own mind with a horrible clarity.

How long ago the marks had been made it was impossible to tell. A mark on the Luna dust stayed there until obliterated by artificial means. Given long enough the natural crumbling of the rock would tend to soften the outlines but no one knew how long that would take. Without air there could be no wind and changes, caused by alterations of temperature in the absence of water, were slow. The marks could have been made ten years earlier, during the past night or the night before that, or they could have been made in the past ten minutes. Mark couldn't tell and he had no way of ever finding out. But one thing was certain. Men had made those marks. And the moon held two kinds of men.

Just where he was Mark didn't know but he could be somewhere near Marigold. The marks might have been made by members of the garrison or by an earlier expedition. Equally, they could have been made by the enemy. If made by the enemy then they could be hiding somewhere this very moment, watching, waiting for him to lead them to the intermediate base. Mark had no proof either way, only knowledge, and it was the knowledge which gripped the pit of his stomach and set his heart pounding.

The knowledge that, if the marks had been made by the enemy, then the one thing he dared not do was to lead them any further. And he had to assume that they had been made by the enemy.

The Sun was as bright as ever as he slowly moved away but he did not look towards the Sun. Neither did he look at the stars glittering in the sky. Instead he looked up at the Earth, so misty and unreal, so beautiful as it hung glowing in the sky. It would be cool on the Earth, with soft winds and rain and the scent of growing things. He began to walk towards it, moving away from wherever Marigold might be, his head filled with dreams.

Dreams of a triumphal return with himself as a hero. Visions of a long, lazy holiday at the Polar resort where he would be surrounded with crisp, cold ice and snow, where he could bath in icy water and gulp gallons of ice cream and chilled white wine. A wonderful dream of contentment and an earthly paradise.

And one which would never be soured by the touch of reality.

E. C. TUBB



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Pluto the Unknown

In this article, a well-known writer on scientific subjects brings us up to the minute information on Pluto, the most distant of all the Solar System planets.

Out at the thin edge of the Solar System, where the chill of interstellar space presses in on our home collection of worlds, a tiny planet orbits round the Sun.

Pluto, ninth planetary outsider of the sun, is so far distant from the warming central fire that it must be a frozen world at a temperature little above absolute zero. Any atmosphere would long ago have condensed to a crystalline solid.

From Pluto even old Sol is only a bright star outshone by the glory of the Milky Way. Any Plutonian natives would have difficulty in comprehending and analysing the true movements of the other planets without the knowledge that the distant Sun was the centre of the system. To give them plenty of time but to add to their difficulties would be Pluto's rate of revolution around the sun—a Plutonian year is 248 Earth years.

Unlike its neighbouring giant, gas-enveloped worlds, Pluto is small; too small to have retained any interior heat and too small to be clearly seen by astronomers in anything less than a 20 inch telescope. It shines solely by reflected light and is of about the fifteenth magnitude, glowing

with a colour yellower than Neptune.

Before the discovery of Pluto, the postulated ninth planet was called Planet X—the Unknown. Two brilliant astronomers, Percival Lowell and W. H. Pickering, calculated that a further planet was still to be discovered; but in nine years' photographic search Lowell failed to find Pluto—he was seeking a giant resembling Jupiter or Neptune and did not dream that Planet X would be smaller than Mars.

Success came after Lowell's death, when 23 year old astronomer Clyde Tombaugh discovered a point of light on his photographic plates in 1930; a point that had moved with respect to the background of stars in as short a time as 24 hours. Added evidence came with the sharp image, typical of a planet and quite unlike a comet's fuzzy print.

Named Pluto—after the Greek god of the lower world—by the young daughter of the Professor of Astronomy at Oxford, the size-mass-ratio of this new planet puzzled astronomers for a long time.

Later on G. P. Kuiper turned the 200 inch reflector on Pluto

and found it to have a diameter of only 3,700 miles. But when astronomers measured the mass they came up with a figure equal to the mass of Earth. This gave it a density of 60, two and a half times the density of the densest metals known to man. Material of this density is known to exist in white dwarf stars; it is unlikely that tiny Pluto contains this alien material. Now many astronomers assume that Pluto has a density equal to that of Earth and thus calculate its mass as a tenth that of Earth.

Most scientists today assume that Pluto is a sterile world—but could some form of life unknown to us exist there?

Of all forms of energy—and life is the use of energy—radioactivity never changes. Unaffected by the bitter cold, could not energy-eating creatures live upon raw nuclear radiation, creatures themselves built of energy fluxes? If this were so the first Terrestrial explorers would not recognise them as living. To Plutonians like these the interior of their planet may be their living space and, bounded by the surface, it is conceivable that they

would never venture to the outside to see the mystery of the stars.

The clue to Pluto's apparently contradictory tiny size is found in its strange orbit. Unlike other planets it rises high above the plane of the ecliptic and, on one side of the System, cuts through the plane closer to the Sun than Neptune. Its reflected light, too, varies from day to day and measurements with photo-electric equipment in 1956 showed a periodicity of 6.390 terrestrial days; far too long a day to be expected for a planet so far from the Sun.

Something must have caused the planet's spin to decrease and a recent theory by G. P. Kuiper suggests that Pluto was once a moon of Neptune.

Like our satellite, it kept always one face presented to its mother planet—until, in the distant past and to the accompaniment of some unguessable cosmic upheaval, it escaped, flung free, to become a true planet in its own right and to wander erratically, a tantalising enigma, about the fringes of the Solar System.

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New Hard-Cover Science Fiction Reviewed by

KENNETH F. SLATER

Regretfully, I announce the obvious. There is a shortage of new "between boards" science fiction at the moment. Let us hope the situation improves as we advance into the New Year—certainly the events of the last few months of the old year should give public interest a boost. Quite apart from the spectacular "Sputnik" achievements of the Russians, the advances in nuclear power methods and such items of "local" interest as the revival of the Channel Tunnel schemes, there have been quite a number of other plot-basics in the Scientific Year of 1957. Such as the symposium by International Union of Geodesy and Geophysics, given at the assembly at Toronto, in which it is indicated that the constant increase of carbon dioxide in the atmosphere will heighten the temperature to such an extent that in the next hundred years the polar ice caps may melt sufficiently to lift the ocean levels by five feet.

But taking our eyes off the future, let us join Roger Lancelyn Green in an exploration of the past of the science-fiction story, space opera/travel section. INTO OTHER WORLDS is the title of his book, published by Abelard-

Schuman at 16/-, 190 pages, including an appendix of some 66 imaginative voyages mentioned in the book.

The author, in the preface to the book, acknowledges that his coverage is not complete. Nevertheless, he has made a very fine presentation of almost all the earlier works on this theme, giving in most cases extensive quotations from the stories, with summaries of the general theme of the books. I am now far better acquainted with several works which previously I knew only by title, and for this I am indebted to Mr. Green. In the later years—particularly in the present century—the information on specific titles is not so specific, nor is the coverage so complete as one would like. In fact there are serious omissions, in my opinion.

The majority of the important works (those which have had a definite and traceable influence on the field of "modern" science fiction) have certainly been included.

However, I am surprised that Mr. Green should mention the astronomer, Garrett P. Serviss, and overlook the science fiction author, Garrett P. Serviss (*A Columbus of Space*, 1911). And

that the only book he mentions which takes the reader outside the solar system is David Lindsay's *A Voyage to Arcturus*. Surely Jean Delaire's *Around A Distant Star* (1904) is worthy of a mention even if only for that fact. On Venus there is very little of interest, as few authors have spent voyages there to leave marks. On this I agree with Mr. Green—but I find it strange that Garrett Smith should be omitted from the list; I am sure his story "Between Worlds" did as much to shape the (until recently) "modern" concept of the veiled planet, as did the work of Burroughs, Stapledon or C. S. Lewis.

You will appreciate that I could go on to make an endless list—well, an almost endless list—of books I feel should, for various reasons, have been included. Mr. Green, you will also appreciate, had excellent and equally varied reasons for omitting them. For instance, he mentions on page 161 "only Olaf Stapledon went further, taking a division of his

Last Men, remote æons in the future, to their final home on Neptune". Now I was positive that many other authors have taken their heroes to Neptune, and I sat back to think it over. True, they have. But very few can you find in book form—there was Clare Winger Harris and Dr. Miles J. Breuer's *A Baby on Neptune*, originally published in 1929 and included in an anthology during the late '40's; J. M. Walsh's *Vanguard to Neptune* appeared in 1932—but in a magazine, and was not issued in book form until recent years, and then only in a pocket book. This, or something similar, applied to every story with Neptune as a locale I could recall. And, of course, Mr. Green has ignored the prolific field of magazine fiction almost entirely.

However, for those of you who would know more about the tales written by Lucian, by Bishop Godwin and by Cyrano de Bergerac here is the book that will answer your questions and

ONE GUINEA PRIZE

To the reader whose Ballot Form (opposite) is first opened at the NEBULA publishing office.

All you have to do, both to win this attractive prize and to help your favourite author win the 1958 Author's Award, is to number the stories in this issue in the order of your preference on the Ballot Form below, or on a postcard if preferred, and mail it immediately to NEBULA, 169 Crownpoint Road, Glasgow, S.E.

The result of the poll on the stories in this issue will appear in NEBULA No. 31.

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perhaps lead you on to explore some of these older tales in person. Although they are not easy to find, they are not all impossible in every sense!

Still on the subject of books of the past, your editor and I have, for almost a year, been discussing what books we like best. We decided to invite you to enjoy the discussion and help us to formulate a list of the British preferences in the science fiction book field. Now, there is nothing new to this—it is a very old science fiction fan pastime. A great number of preference lists have been compiled, perhaps the best known being P. Schuyler Miller's "poll" for the "Best" in the American *Astounding Science Fiction*, and "A Basic Science Fiction Library" which was compiled by August Derleth and published in the *Arkham Sampler* for Winter, 1949. The latter was based on the opinions and selections of twelve well-known American science fiction personalities; the former was primarily American opinion, although Mr. Miller did receive and include lists from overseas readers of *Astounding*.

We want to discover the British opinion (although lists will be welcomed from overseas readers of NEBULA SCIENCE FICTION, and will be included in the final summary) and to this end we would like readers to send us lists of their favourite or best-liked or "essential" science fiction books. Books, please, not novels or stories which have appeared in magazine but not in book-format. Anthologies and collections must be considered, naturally, but please don't make life too difficult by


suggesting "any anthology which includes a short story called such-and-such". If you like to suggest short stories for a "basic anthology" as a separate thing, we'll be happy to collate these—but the thing we are considering at the moment must be confined to books already published. In the case of series like Smith's "Skylark" and "Lensman" stories, or Asimov's "Foundation" trilogy, we shall consider the vote as being for the first title in each series unless you specify a title. In other words, if you write down "Lensman Stories" we'll give the vote to "Triplanetary". If however you put "First Lensman" we'll add the vote to the total for that title only.

Please write your lists on a sheet of paper, headed with your name and address, numbered downwards with 1 to 25, the top line being naturally your prime favourite, and so on down the list. It will help if you keep your opinions away from your lists—we say that knowing full well that many of you are going to write us lengthy letters giving the reason for the inclusion of certain titles. These letters will be welcome, but to simplify the task of carding the actual lists please use separate sheets of paper. The address to which you should send your list is that on the contents page of this magazine.

Closing date for the files will be June 1st, 1958, so in case you are reading this some time after publication—well there might just be time to make your mark if you hurry.

In advance—many thanks for your co-operation!

SCIENTIFILM PREVIEW



News and Advance Film Reviews direct from Hollywood's

FORREST J. ACKERMAN

Now I'm mad.

I've just seen a picture so bad that you couldn't pay me to sit through it.

Fortunately, I saw it free. It didn't cost me anything—only my sanity.

This ineffable inanity has a name. And I want you to repeat it to yourself three times so that if you ever encounter it on a marquee you will flee in the opposite direction as though the Monster from Loch Ness, the Nightmare from the Nebula and the Colossal Tax Collector were all snarling at your heels.

"It" was filmed under the title of *Monster on the Hill*, but released under the title of **TEENAGE MONSTER**.

Both teenagers and monsters have been maligned by this crude film. Horsecwhipping would be too good for the producers: they should be monster-whipped. Teenagers of the world, unite! Monsters of other worlds, revolt! Descend on the perpetrators of this pallid, puerile, potboiled piffle, not with a mere cat-o'-nine-tails but a tail-o'-twentacles. (That's a lash made from the tentacles of a super-octopus with twenty of 'em.)

TEENAGE MONSTER takes place about a hundred years ago, and, frankly, I suspect that was about when it was filmed. The monster-boy speaks so unintelligibly that I think they took him out of an old silent picture and dubbed in his voice. I don't know what language they dubbed it into; broken English, I guess.

Here is what you will miss by avoiding **TEENAGE MONSTER**: a flaming meteor in the beginning of the picture explodes on hitting the ground and knocks a little boy unconscious, blackening up half his face a bit in the process. Seven years later we see him looking not fourteen but about 140. Even after he discovers a rich vein of gold ore for his doting Mother, his mom can't seem to afford a pair of sheep shears to tidy up his hair and face a bit. He mightn't have been such a bad-looking monster if he'd got rid of that wolfman's mane, but that mess of unkempt whiskers and wig would be enough to turn any teenager into a monster. A face like that only a barber could love—and a Mother. Mom was prepared to overlook son's first four or five senseless murders,

but after that she began to fear he might be falling into bad behaviour patterns. She tried to get him to stay in his bedroom and play with a comely wench who was blackmailing her, but he broke promises like he broke his victims' backs. You may not believe this, but (even though I stayed awake to the bitter end, and have a bitter ex-friend who was with me to prove it) I can't remember now how the blasted thing ended. Sometimes Nature is merciful and blots out memories too painful to be borne.

TEENAGE MONSTER: Rating—one ink blob.

THE BRAIN FROM PLANET AROUS will probably be double-billed with the foregoing film. It was made by the same company, which only goes to prove that the producers can make other than atrocious films: this one is merely pretty bad. Riding a giant sparkler from space, a mad brain from Planet Arous (wherever in or outside the solar system *that* may be) arrives on Planet Earth and takes over John Agar. Agar, an unwilling host to this hostile superbrain from another world, becomes himself a world menace. When the disembodied brain, about ten times human size, somehow squeezes itself into Agar's brain-pan, Agar becomes a different man, a maniacal man with a mad power to destroy. Ultratonic rays leap from his eyes to explode aeroplanes in mid-air, level military targets like an atomic bomb. Agar of Arous commands the diplomatic representatives of the world to sit at his round table while he strides around it, demonstrating his extraplanetary power, threatening to raze the capitals of any non-

co-operating countries.

But a little dog shall lead them! and a good brain from Planet Arous (like Earth, they come in both varieties) has followed the bad one here and taken up residence in a canine body. Doggedly, the Good Brain seeks out the Bad Brain and assists in its destruction.

Actually, in an old-fashioned way, this picture was like watching one of the old hackworks of a quarter century ago by Edmond Hamilton, Ray Cummings or John Russell Fearn come to life. It's only a shame that one of the oldtimers didn't collect a little pelf when Hollywood lifted another of their ideas off the shelf and filmed it.

The malevolent brain looked pretty malevolent, bobbing about in its naked state, and I will state that the climax, when the hero was taking the axe to the ex-Arousian, was pretty good. What's that you say? Sounds like once again brain-power was beaten by brawn-power? Well, that's the way the creature crumbles. . .

BLOOD OF DRACULA is worse than its companion feature, **I WAS A TEENAGE FRANKENSTEIN**. A pseudo-science horror story of a teenager in a girls' boarding-school who falls under the influence of the female chemistry teacher. Science instructress has been conducting supernatural experiments with a centuries-old amulet from the Carpathians, does the Svengali act on the hapless heroine and vampirises her. Thereafter the Dracula-girl goes about her predestined nocturnal work with fang and claw until the cast has been diminished by five people.



WALTER WILLIS writes for you—

That little piece I wrote about Ted Tubb a while ago seems to have been digested without any harmful after-effects: at least shortly after it was published I met Mr. Tubb at a party during the world convention and he was still speaking to me, even if slightly indistinctly. I was relieved. Not that Ted is hypersensitive, but I thought he might have taken umbrage at what I said about his car—haven't you noticed that motorists are far more sensitive about their car than their character? However, the autobiography didn't produce any writs for libel from Ted's solicitors, or even the car's, so I thought I might tell you something about the backstage personality of the author who recently won the 1957 NEBULA Award, Mr. William F. Temple.

Many sympathetic friends are probably feeling at this point that I should get danger money for this job of rending the Temple veil (or perhaps, if what I say isn't accurate, "hard lying money"), for Mr. Temple has quite a reputation as a devastating wit. Even a swashbuckling desperado like Chuck Harris quietly unbuckles his swash and steals away at the prospect of crossing his path. This is not because Bill Temple is in the habit

of sweeping victims into oblivion with his little finger, but because it's only too obvious that he could do so if he wanted to. To the average reader William F. Temple is a serious and sensitive author whose work reflects a thoughtful concern for humanity. This is Bill Temple all right, but he is also a brilliant comedian whose writing for fun has been delighting his friends for two decades.

At which point I think I had better introduce his stooge. You may have heard of him, a fellow called Arthur C. Clarke. It's hard for me to realise that to the ordinary reader there's no connection between these two, because to me they're as inseparable as Abbott and Costello . . . on a higher plane, of course. These two have been a sort of cross-talk comedy act behind the science fiction scenes for many wonderful years. It's hardly fair to class Arthur C. Clarke as a stooge, because he gives as good as he gets, but the fact remains that Temple has got his mythology accepted by his small but appreciative audience, and all Arthur has been able to do is to fight a gallant rearguard action. All this started way back in the mid-thirties, when both of them were unknown young fans and Arthur was always talking

about a wonderful novel he was going to write (and which eventually became *Against the Fall Of Night* and later *The City and The Stars*), and Bill's series, *The British Fan in His Natural Haunts*, was the glory of *Novae Terrae*, the leading amateur magazine of the day. The mythology then created by Bill depicted Arthur as "Ego", an eager-beaver egocentric scientific crackpot, and Bill himself as an innocent Robert-Benchley-type victim. Since those early days their energies have been largely dissipated in professional commitments and prosperity—as Bill put it at the 1953 Convention, "Arthur has beaten me to the paunch"—but the old flames flare up wonderfully now and again. And now modern readers are able to relive the old days with the publication in the fanmag *Hyphen* of excerpts from Bill's memoirs of the early days of the British Interplanetary Society. This is all fabulous stuff, but my favourite is the one about the time they had at a B.I.S. meeting

in Bill and Arthur's flat to test a new high-power rocket fuel invented by Frank Edward Arnold. How first they couldn't even get it lit, and then they decided they needed a pressure chamber, and then the Director has the bright idea of using the gas oven, baking a gram of the fuel until it exploded, the idea being that the expanding gases from the fuel would enter the stove burners and push the coal gas back along the pipe, registering their speed on the dials of the gas meter: and how they got into an argument about which way the pointers would revolve, and that developed into a bitter controversy as to whether water spirals out of a bath in the Northern Hemisphere clockwise or anti-clockwise, and they roamed all over the apartment house filling and emptying baths: and what happens when they finally do explode the rocket fuel in the gas stove. I'm not sure exactly how much of it is cold fact, though in an introduction to the first of the series Arthur Clarke said it was based quite closely on a specific event (though "the character described as 'Ego' is purely a figment of Mr. Temple's imagination, possibly a synthesis of his better qualities"), but it's wonderful reading especially now the British Interplanetary Society is so serious and respectable, and I wonder someone doesn't publish it professionally. But then, as I was saying in connection with Ted Tubb, that's the way it often is in the science fiction field. So many Hamlets playing comedian so well—or is it the other way about?—and so few to appreciate these multiple facets of genius.

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THE SOLAR BOMB—*Continued from inside front cover*

out of a self-controlling reaction. Should the conversion of hydrogen in the interior proceed too rapidly, the Sun merely expands a little so that it cools and thus checks the rate of conversion. If the rate drops too far, the Sun shrinks, increasing the internal temperature and restoring the balance.

The photograph shows the Sun seen in hydrogen light; but all that violent action is going on in the freezing cold—by nuclear standards. No transformation of hydrogen to helium goes on at the surface—it's far too cold. The surface shows only the byproducts of the holocaust deep within, where that temperature of 13 million degrees Centigrade builds up the pressure to combat the overlying mass creating a pressure of up to ten thousand million Earthly atmospheres. Only then can two hydrogen atoms, stripped of their electrons but still acting as a perfect gas, collide, combine and form heavy hydrogen.

Then another hydrogen nucleus tags on to form helium—3, two of which integrate to create helium—4, the stable 'ash' of the Sun. The energy concentration is so great at the Sun's core that this reaction produces not the heat and light we expect from hydrogen bomb reactions but radiation in the X-ray band. The Solar core is a fantastic maelstrom of boiling, tangling masses of gas compressed to a density seventy times that of water.

The energy in the core is transferred from a sphere 70,000 miles in radius mainly by convection currents in the compressed gas. Only in the 400,000 miles of gas between it and the surface does radiation account for most of the heat transfer; radiation penetrating only slowly as it is absorbed and re-emitted by hydrogen gas.

Then, near the surface, convection currents take over the energy removal again. Columns of hot gas, seen in the photograph as the stippled pattern on the Sun, rise, cool and fall back. Imposed on this overall pattern are the mountains, whirlpools and clouds of gas torn and twisted by little-understood forces into strange phenomena.

These awe-inspiring features of cosmic technology are best seen in monochromatic light—such as the hydrogen light in which the photograph was taken. The heavy black spots are sunspots, cooler than the surrounding gas but still at white heat. The surface near them is twisted and shredded into spirals by their intense magnetic fields and the funnelling of gas in and out of their cavities. Riding over the sunspots are bright clouds of calcium and hydrogen vapour, known as flocculi, well above the tortured surface.

Bright branches associated with sunspots best seen near the rim are faculae, mountains of gas piling up hundreds of miles to produce thousand mile long crests.

The long dark filaments shown vividly in the photograph are cool jets of gas thrown tens of thousands of miles into the tenuous solar atmosphere by what seem to be magnetic forces. Certainly no other explanation covers the manner in which some jets remain stationary for days and are then accelerated out into space directly against the twenty-eight gravities pull of the Sun.

This is the Sun as scientists see it. The production of helium from hydrogen is known as the proton-proton chain, since a hydrogen nucleus is a proton—ordinary words, to explain the stupendous miracle that second by second flames in the sky above us. The Sun is a cosmic hydrogen bomb with a built-in feedback system to control its output; until that fine day when it expands to 100 times its present radius and becomes 1,000 times more luminous. After that it will shrink, become smaller, decreasing to a white dwarf star only a twentieth of its present size—although it will only decrease in luminosity to about 100 times its present brightness.

The Sun may be just a cosmic hydrogen bomb, an astronomical machine with strange surface phenomena; but the awe-inspiring grandeur of the rising Sun—which called forth life on the Earth—means more to Man than mere machinery and miracles among the stars. It is a challenge to his imagination, to his powers of mind and, above all, to his sense of wonder.

Another scan
by
cape1736

